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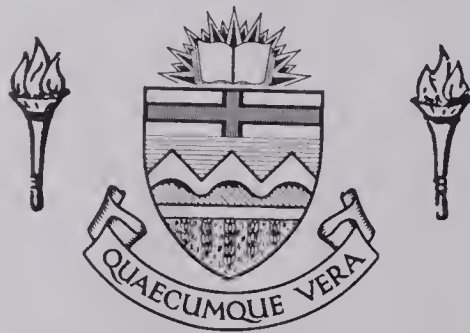
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DOMESTIC FOOD CROP PRODUCTION,

GRENADA, WEST INDIES

by

JOHN STEVEN BRIERLEY



A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE  
OF MASTER OF ARTS

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MAY, 1968



THE UNIVERSITY OF ALBERTA  
FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled Domestic Food Crop Production, Grenada, West Indies, submitted by John Steven Brierley in partial fulfillment of the requirements for the degree of Master of Arts.



Domestic food crop farming is an aspect of West Indian economic development deserving more positive attention than it has been given by both researchers and government administrators. With these islands in the West Indies attaining self government, it is increasingly urgent that these islands improve their unfavorable balance of payments position. Their economic situation is continually aggravated by an ever increasing reliance upon imported foodstuffs and can be expected to grow worse as the population expands. There is a need for a revision of the economic policies of these islands, and a scientific approach to food crop production is one very definite means for ameliorating this situation.

One island which typifies the problem of high food imports and a substantial trade gap is Grenada, within the Eastern Caribbean group. By tracing the history of food crop production in Grenada one is able to gain an appreciation of the present state of the local production. The types and uses of the local crops are treated, followed by a description of farming methods and the organization of the local food crop market. The author argues that the island is capable of a much greater production of foodstuffs. In order to attain this, however, the peasant farmer must be taught to discard his traditional conservative and even negative attitude toward food crop farming, and to be made aware that, with modern scientific farming techniques this type of farming can be the source of a highly profitable livelihood. The thesis concludes with outlines as





to the manner in which this transition might best be achieved through education and legislation.



## ACKNOWLEDGEMENTS

The writer is indebted to the Department of Agriculture, Grenada, for being so cooperative in providing every assistance with my field work in the provision grounds and in the local market. In particular I should like to thank Mr. G. A. Southwell, Superintendent of Agriculture, and Mr. N. James, Marketing Officer, for their support and advice. To Mr. S. Law, Agricultural Instructor, I am especially grateful for the time, patience, and wealth of valuable information which he supplied to me during my stay in Grenada and through subsequent correspondence. For the courtesy shown me by the many peasant farmers visited I am also grateful, for without their cooperation this study would have proved much more difficult.

To my supervisor Dr. S. I. Smith I am most grateful for the long hours spent giving valuable and constructive criticism. To Dr. J. F. Bergmann I express appreciation for arousing my interest in the topic and for giving me additional guidance and assistance when necessary.

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## TABLE OF CONTENTS

	PAGE
ABSTRACT . . . . .	iii
ACKNOWLEDGEMENTS . . . . .	v
TABLE OF CONTENTS . . . . .	vi
LIST OF FIGURES. . . . .	viii
LIST OF GRAPHS . . . . .	viii
LIST OF TABLES . . . . .	ix
LIST OF PLATES . . . . .	x
INTRODUCTION . . . . .	xi
CHAPTER	
I. THE STATUS OF FOOD CROP PRODUCTION IN THE WEST INDIES. . . . .	1
Introduction . . . . .	1
Review of Food Crop Agriculture . . . . .	2
Problems Inherent in West Indian Peasant Agriculture . . . . .	4
Selection of Grenada as the Island of Study. . . . .	9
II. THE GRENADIAN PHYSICAL ENVIRONMENT . . . . .	14
Location and Size. . . . .	14
Geology. . . . .	15
Topography . . . . .	17
Climate. . . . .	18
Vegetation . . . . .	23
Soils. . . . .	26
III. HISTORICAL DEVELOPMENT OF FOOD CROP FARMING ON GRENADA . . . . .	30
IV. MAJOR FOOD CROPS AND THEIR USES . . . . .	47
Vegetables . . . . .	48
Roots and Tubers	
Green Leaves and Flowers	
Fruit and Pods	





	vii
	Page
Fruit Trees . . . . .	59
Herbs and Spices . . . . .	63
Disease and Pests . . . . .	65
Use of Crops in the Local Diet . . . . .	66
V. CHARACTERISTICS AND PRACTICES IN FOOD CROP PRODUCTION . . . . .	69
General Characteristics . . . . .	69
Farm Size	
Holdings and Tenure	
Tools	
Agricultural Practices . . . . .	75
Mt. Moritz Farming Area	
Soil Conservation and Fertility Control	
Intercropping	
Superstitious Practices and Beliefs	
Traditional Practices	
Food Crop Producing Areas . . . . .	86
Demonstration Food Farms . . . . .	89
Present and Future Problems . . . . .	90
VI. THE PRESENT DAY LOCAL FOOD CROP MARKET . . . . .	95
Transportation. . . . .	96
Organization - St. George's Market . . . . .	96
Management of Market . . . . .	99
Grenville Market . . . . .	99
Supermarkets. . . . .	100
Present and Future Problems . . . . .	101
VII. ASSESSMENT OF STATUS AND PROSPECTS OF GRENADIAN FOOD CROP PRODUCTION . . . . .	105
Education . . . . .	107
Legislation . . . . .	111
BIBLIOGRAPHY. . . . .	116
APPENDIX. . . . .	123

#### LIST OF TABLES

I. 12 Year Demographic Gap - Grenada	123
II. Grenada Import and Export Figures in Millions \$W.I. (1951 - 1966) . . . . .	124
III. Import Tariffs on Foodstuffs . . . . .	125



## LIST OF FIGURES

	FOLLOWING PAGE
1. Grenada, dot map of population . . . . .	10
2. Grenada, location map . . . . .	14
3. Grenada, structure and relief . . . . .	16
4. West-east cross-section through Grenville . . . . .	17
5. Grenada, isohyet map of mean annual rainfall . . . . .	20
6. Diagrammatic cross-section of a high oceanic island, showing typical arrangement of vegetation zones . . . . .	23
7. Grenada, natural vegetation . . . . .	24
8. Grenada, soils . . . . .	27
9. Soil conservation measures . . . . .	77
10. Grenada, food crop areas . . . . .	86
11. St. George's, market flow diagram showing source of venders . . . . .	95
12. Grenville market flow diagram showing source of venders. . . . .	95
13. Plan of St. George's market . . . . .	96
14. Plan of Grenville market . . . . .	96

## LIST OF GRAPHS

1. Grenada, demographic gap, 1956-67. . . . .	10
2. Grenada, imports and exports, 1951-1966. . . . .	10



## LIST OF TABLES

	PAGE
I. Net migration - Grenada 1957-1967 . . . . .	10
II. Tourists in Grenada 1958-1966 . . . . .	12
III. Mean Annual Temperature °F. . . . .	19
IV. Mean Annual Rainfall in Inches . . . . .	21
V. Richmond Hill, St. George's, Relative Humidity and Cloudiness in Percent . . . . .	22





## LIST OF PLATES

	FOLLOWING PAGE
1. Dasheen planted in former steam channel . . . . .	71
2. Typical peasant tools; cutlass, Dutch hoe, spade, fork and basket . . . . .	71
3. Contour furrows in Mt. Moritz, planted in tannias to the left, and sweet potatoes to the right . . .	78
4. Cassava plot near Munich showing lack of conserva- tion measures for land in slope . . . . .	78
5. Corn field in Crochu . . . . .	79
6. Interplanting of French beans and tannia . . . . .	79
7. Kitchen garden, an example of intercropping corn, sweet potatoes, squash, French beans, and tannias .	82
8. Lime on a stick in a plot of corn, to ward off 'Mal Joux', in the Crochu district . . . . .	82
9. Beausejour Demonstration Food Farm showing good agricultural methods, and labourers house . . . . .	89
10. St. George's market on Saturday showing displays on the ground, loading and unloading zone for buses and taxis, and crowded conditions for selling and buying . . . . .	96
11. Venders from Vendome, Willis and Constantine selling chive, thyme, carrots, ground provisions, calialou, and bananas . . . . .	96
12. St. George's market showing produce arranged in heaps . . . . .	97
13. Grenville market on Saturday, showing displays set up on trestles . . . . .	97





## INTRODUCTION

This thesis was undertaken with the intention of examining the state of food crop farming in a developing part of the Eastern Caribbean. Domestic food crop farming in Grenada is unquestionably a topic of considerable economic significance and yet, one which has had a history of low priority in the eyes of researchers and government reformers alike. It is necessary therefore to study in the field the prevailing attitudes of the people as well as the methods of their crop production in order to understand the neglected state of this aspect of farming.

For the purpose of familiarizing myself with the problems I travelled to Grenada in early June 1967 just before the wet season commenced. This permitted me the opportunity of seeing the food crop lands under preparation in anticipation of the wet season. This was a seasonal activity which would otherwise have been missed if I had arrived later.

Visits to the peasant farms were usually done in the company of agricultural instructors from the Department of Agriculture in their normal round of duties. Generally these men had a good rapport with the peasant, and were considered as his counselor for domestic as well as agricultural problems. Through their introduction to the farmer and their explanation of the purpose of my visit I was able to benefit from the relationship and confidence which these instructors enjoy from the peasant. On those occasions when I had to introduce myself



to the farmer I was invariably met with suspicion, being regarded as an investigator from the British Colonial Office, or as a new tax assessor on the island. To convince them I was neither of these types took time, and when pertinent questions were asked concerning their food crop production the answers had to be viewed with skepticism. These were often incompatible with the general pattern for the area. The instructor's presence obviated these problems, but at the same time gave rise to another problem, that of possibly biased samples. In the course of conducting me around food growing areas the instructors would understandably take me to their best farmers and/or those by whom they were well respected. This meant that it was necessary to interpolate from what I learned from the better examples of food crop farming regarding size, management and principal crops in the areas visited. When the opportunity arose I suggested a farm at random that might be visited, in the hope that any bias in the instructor's selection of farms visited would be compensated in part.

Visits to farms were made during the last weeks in July during the wet season. I was thus able to see the crops in an advanced state of growth and to note the associated agricultural activities.

The questions asked of the farmers pertained to their total acreage in crops, the amount of rented lands, amount in food crops, principal crops and rotational pattern, family and outside labour, number and kind of livestock, and the outlet for their produce.





All the growing areas could not be examined thoroughly in the time available. Those areas most important and representative of the general pattern of food production were studied. These happen to be located in the southern half of the island, approximately south of a line joining Concord and Grenville (Figures 1 and 2). This section of the island accounts for about 63% of the population, some 51,000. Likewise for the market study only the St. George's and Grenville markets were studied in detail.

The markets were studied under the guidance of the marketing officer. He assisted in informing me of the source of the market venders, of their principal food crops, and of the general organization of the market.

The major problem that confronted me in this study was the unavailability of statistics to substantiate many of the statements which were made. In most cases I had to rely on personal estimates which were used without verifications. Statistics concerning production and sale were kept neither by farmers nor market officers. Those figures which were available from government sources were either outdated or were subject to suspicion. This left much to speculation and sample studies.





## CHAPTER ONE

### THE STATUS OF FOOD CROP PRODUCTION IN THE WEST INDIES

#### Introduction

Domestic food crop production is at the present time a topic of considerable concern for most of the islands in the West Indies.<sup>1</sup> The pressure that increasing population is putting on the arable land of these islands is critical, and in proportion to this is the problem of producing food. Moreover, as a facet of an agrarian economy it is singly as important as any export crop, but in virtually all instances in the West Indies it has been traditionally relegated to a very secondary position in the agricultural program. This has resulted in an established dependence upon imported foodstuffs; a trend the revenues of these islands cannot support as it contributes to a widening of the trade gap.

It was the need to emphasize the importance of food-crop production in the islands and the lack of general public concern, study, or improvement in this field of agriculture, that aroused the writer's interest in the topic. By making a study on a specific island, it is hoped that some understanding and appreciation of the problems of "over-population", and under-production of domestic food needs of a small area

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<sup>1</sup>When reference is made to the West Indies, the author implies only the British islands.



can be gained, as these small islands represent in miniature the problems of many larger countries.<sup>2</sup>

### Review of Food Crop Agriculture

Since post-Columbian days, food crop production has been almost solely in the hands of the slaves and later the peasant farmer. It is since the 1930's that peasant agriculture in the West Indies has been particularly scrutinized for improvement. The total contribution of the peasant farmer to the local economy has not been underrated, but food-crop production is an agricultural facet which has in the past been complacently overlooked. This can be attributed to the appeal that plantation operations and export crop production have had on researchers and reporters of the Caribbean scene. Most commentaries at best give passing mention to provision grounds i.e. land where food-crops are grown.

The lack of interest in provision grounds, as reflected in the literature, is consequent upon many local government philosophies. In this second half of the twentieth century many of the islands are attaining political self-government or total independence. This has resulted in the less resourceful islands playing a game of economic roulette. They are backing an expanding export and tourist trade as a means of obtaining a financial bonanza to help narrow their trade gap. Their

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<sup>2</sup>H. J. Finkel, "Patterns of Land Tenure in the Leeward and Windward Islands and their Relevance to Problems of Agriculture Development in the West Indies", Economic Geography, April 1964, p. 164.





exports are principally bananas, cocoa and sugar cane - crops sensitive to market instability, in addition to being vulnerable to seasonal natural hazards such as tropical storms and drought. Tourism also fails to give stability as it is susceptible to the vagaries of fashion, ideological standpoints, and the seasonality of business. The writer contends that these islands should be striving for greater self-sufficiency in their economy, as far as foodstuffs are concerned. By producing, processing and preserving more foodstuffs, and encouraging substitution of imports, the importation of food could be drastically reduced. To justify this contention, an examination of present conditions is attempted. This is followed by a series of appropriate recommendations based upon resource evaluation from the geographer's point of view. It is along the recommended lines that the writer hopes the Government can profitably proceed.

On most of the islands food crop production is a haphazard operation. Peasant farmers usually depend on the cultivation of export crops for a livelihood, while it is the surplus of their own subsistence food plots that is sold in the local market. Such a practice makes for an unreliable supply of market produce and unjustifiably high prices. Therefore, it is believed that before any positive and permanent improvement can be seen in the economies of these islands, food-crop farming must receive greater attention, with policy from the local governments being planned in a methodical manner.



## Problems Inherent in West Indian Peasant Agriculture

The problems confronting food-crop development and expansion have been recognized for some time. The "West India Royal Commission Report 1939" prepared under Lord Moyne outlines the areas for improvement and development of the food-crop farmer. Recommendation 20 of this report states,

Agriculture is the principal source of sustenance and wealth in the West Indies and the standards of life must largely depend on the intensive use of the soil. The outstanding agricultural need in the West Indies is more intensive use of the land with increased production of food in order to support a rapidly growing population. The most urgent need is the development of peasant agriculture . . . .<sup>3</sup>

It also recommended that a survey of peasant agriculture be made, together with investigations for the improvement of peasant farming techniques and management "based on mixed farming and the complimentary use of livestock and crops."<sup>4</sup> Other difficulties recognized as contributing to the poor state of peasant agriculture were lack of technical knowledge, inadequate marketing facilities, poor status of the farmer, lack of regular working hours by peasant labourers, lack of capital, and problems arising from land tenure and land use systems.

In response to this report Dr. A. L. Jolly, and Dr. C. Y. Shephard at the Imperial College of Tropical Agriculture,

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<sup>3</sup>H.M.S.O., West India Royal Commission 1938-39, Statement of Action Taken on the Recommendations, London, 1945, p. 68.

<sup>4</sup>Ibid., p. 90.





Trinidad studied peasant and small scale farming in the West Indies, especially in the Leeward and Windward Islands. Jolly identified the following handicaps among peasant farmers:

1. Tenure is often of the least accessible land. This is usually infertile, swampy, rocky and mountainous.

. . . because West Indian agriculture developed under estate organization, the only land that became available to the small farmers was that which no planter thought good enough to form into an estate, or land on which estate agriculture did not survive.<sup>5</sup>

Because land which is the freehold property of the small farmer is usually insufficient to make a living from, it becomes necessary to rent land or to share-crop.<sup>6</sup>

2. The fragmentation of the farmer's property caused by the acquisition of new land not contiguous to his initial property, restricts the type of tools and equipment which can be used. It is an inefficient and time consuming arrangement that limits agricultural development.

3. The system of marketing for local food crops is "most inefficient and disorganized."<sup>7</sup> The cost of marketing, and the uncertainty of sale and prices discourage the peasant farmer from specializing in food crop farming.

<sup>5</sup>A. L. Jolly, Reading in Small Scale Farming, Trinidad, 1956, p. 1.

<sup>6</sup>The system whereby a fraction, usually 1/3, of the produce reaped from a given piece of land is given in lieu of rent for the use of that land.

<sup>7</sup>Jolly, op. cit., p. 2.



4. The established emphasis upon export crops as a ready source of cash worsens the seasonal distribution of labour. This makes for part time unemployment and creates a need for hired labour during the busy seasons, - another unsatisfactory arrangement.

5. The lack of capital is the greatest handicap. It is not solely the "absolute lack of capital, but rather the unwillingness of farmers to make agricultural investments."<sup>8</sup> There is much poverty amongst the peasant farmers and where it exists, it encourages inefficiency which results in only greater poverty - a vicious circle.<sup>9</sup>

The findings and experiments of Jolly and others with respect to food crop farming have had no profound effect in changing or alleviating the problems inherent in West Indian peasant agriculture. The most significant change wrought has been the recent introduction of new strains of crops which are more disease resistant and more productive. A primary reason for the lack of any major improvement in peasant farming and in their production of food crops, seems to be the attitude adopted by local governments, especially those less politically prominent in the region: the Windward and the Leeward Islands. Here the post World War II agricultural policy has been directed towards boosting production of bananas,

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<sup>8</sup>Loc. cit.

<sup>9</sup>A. L. Jolly, Report on Peasant Experimental Farms at the Imperial College of Tropical Agriculture, Trinidad, B.W.I., Caribbean Commission, Trinidad 1954, p. 3.





cocoa, and sugar cane, with the result that food crop production is further overlooked. It is now becoming urgent that there be a reappraisal of the agrarian economy of these islands. Land reforms, revised land taxes, subsidy schemes, interest from bank loans, protective tariffs and improved marketing facilities, are ways in which an agrarian reorganization might effectively be made. This can only be achieved by strict governmental direction. The fact that continually since the 1930's the peasant farmer has failed to meet the food demands of his island, really illustrates the lack of government success in taking positive radical action. There is evidence of all too great a concern with taking mincing, cautious steps in adopting a popular traditional policy in order that personal political ambitions might be maintained at the following election. Thus, most of the changes governments have brought about have proven inadequate, outdated and of transient benefit to meaningful food-crop production.

Recently tourism is being seen as supplying an incentive for the promotion of food crops. The "Report of the Tri-Partite Economic Survey of the Eastern Caribbean" 1966, regards tourism as the only way in which large amounts of foreign capital can be brought into the islands to improve the economy. It is to be hoped that tourism will offer a secure market for local foods, and encourage peasant farmers to realize that a profitable livelihood can be gained by cultivating food crops. Although tourism has expanded noticeably in the





last ten years, however, little evidence of increased food-crop production is to be seen. This partly reflects lack of legislative emphasis on food-crop promotion. The fact is, that most islands under the present organization are incapable of producing the right kind of food in sufficient quantities at the right time of year to satisfy the demands of tourist hotels. Hence the major hotels, catering as they do mainly to a North American clientele, find it more convenient and cheaper to rely on imported foodstuffs to satisfy the tastes of their guests. The above mentioned Report further states that "tourism must be supplemented by a major effort in the direction of import substitution of food."<sup>10</sup> The implementation of this recommendation must come from the local government.

Solutions to the problems of food crop production are not readily found. Each island has its own peculiar problems, although the essential nature of the problems, i.e. those associated with peasant agriculture, and the "laissez-faire" attitude of local governments, is fairly ubiquitous. Before any solutions can be suggested, a comprehensive study of the problems of food-crop production and marketing in any one island must be made. This in itself, is not easily done as the variables, such as human, economic, agrarian, historical, and political factors are knit together in a complex framework. An attempt to unravel and understand the nature of this problem

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<sup>10</sup>Sargent et al., Report of Tri-partite Economic Survey of the Eastern Caribbean, n. pub. 1966, n.p.



in these islands is made in the case of Grenada.

### Selection of Grenada as the Island of Study

Grenada manifests the general problems as representatively as any of the islands. One fact is that it has developed more rapidly in the twentieth century than other British islands in the Leeward and Windward chain. It is here that a study of food-crop production today would be of greatest value in assessing bases for attack on what should be for all the islands, a matter of concern.

Other criteria upon which the selection of Grenada was based are:

1. The area of 76,200 acres was thought to be a manageable size of an island for a comprehensive study to be undertaken.

2. The population estimate of 92,000 (i.e. excluding Carriacou) for 1967 gives the island a population density of about 780 persons per square mile - probably the highest among the Leeward and Windward Islands.<sup>11</sup> The 70 square miles of cropland to feed this population gives a real population density of 1,314 persons. Such a figure compares with about 250 persons per square mile of cultivated land in India, 750 in China, 208 in the European Common Market countries, and 1,775

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<sup>11</sup>Doubt stems from the fact that present growth estimates are not available at the present time for Montserrat, the only island in contention.





in Japan.<sup>12</sup> Obviously there is pressure of population on the land. Some appreciation of this can be seen from Figure 1. Table I shows the net migration to Grenada over the last decade.

TABLE I NET MIGRATION - GRENADA 1957-1967

<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>
-1,956	-2,443	+437	-2,024	-2,327	-1,710
<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	
-279	-728	-1,115	+152	-960	

- out migration                      + in migration

Source: Department of Immigration, St. George's, Grenada.

The marked decline since the early 1960's is due to the passing of the United Kingdom Immigration Act in 1962. This Act reduced immigration into Britain from Grenada from 2,260 in 1961 to 469 in 1963.<sup>13</sup> The figure for 1960 represents about 2.6% of the total population. Such migration held the high national increase in check.

3. Population growth has been high during the past decade. During the late 1950's and early 1960's when emigration was high, the demographic gap, i.e. the difference between birth rate and death rate, was proportionally high. Graph I, and Table I of the appendix illustrate this fact.

Since 1960 the demographic gap has been narrowing; this being attributed to a marked decline in the birth rate. The decrease in birth rate since 1964 reflects partly the work of

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<sup>12</sup>Finkel, op. cit., pp. 164-165.

<sup>13</sup>Department of Immigration Statistics St. George's, Grenada, 1967.





# GRENADA

## DOT MAP OF POPULATION 1960

ONE DOT REPRESENTS 20 PERSONS

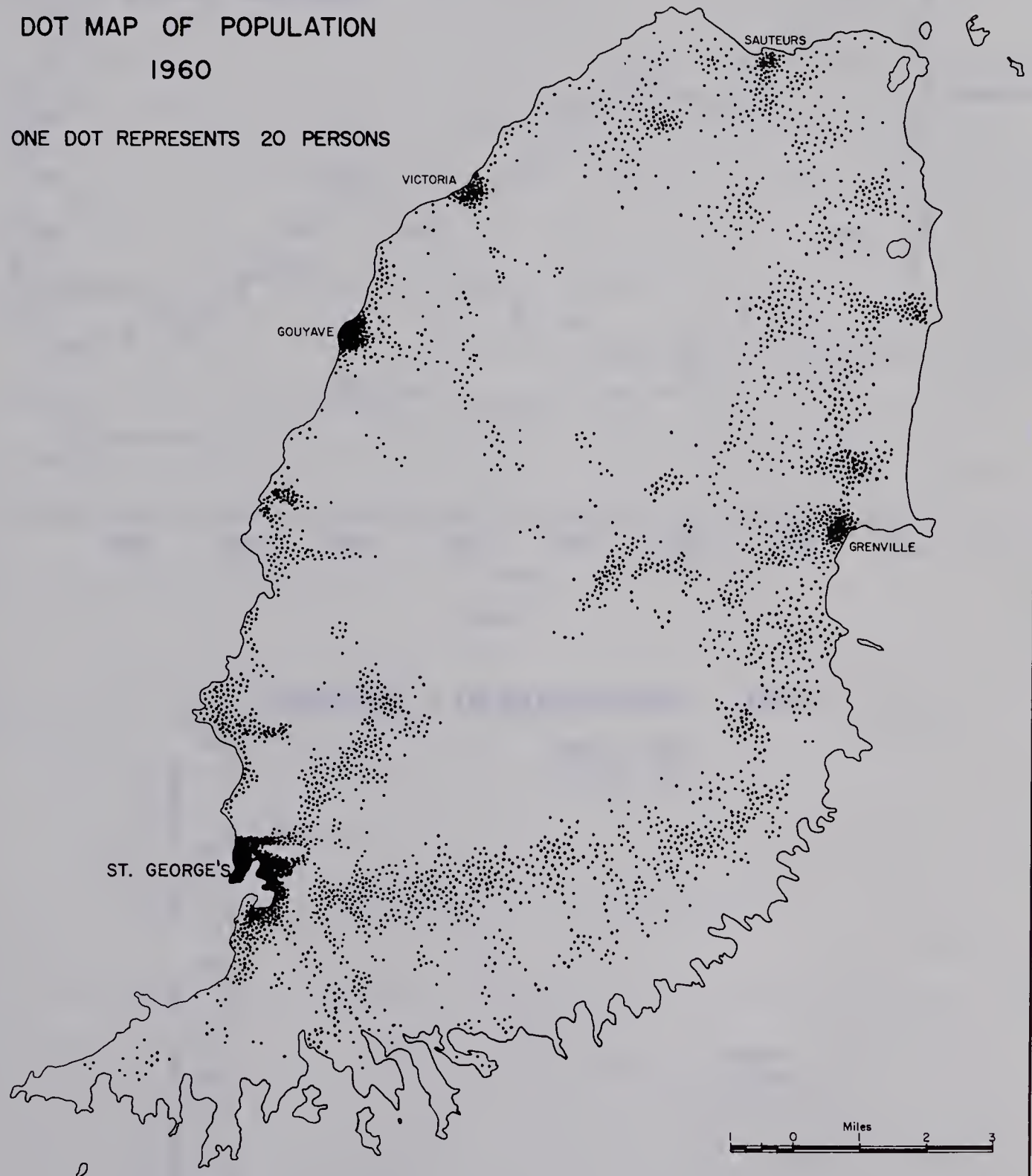
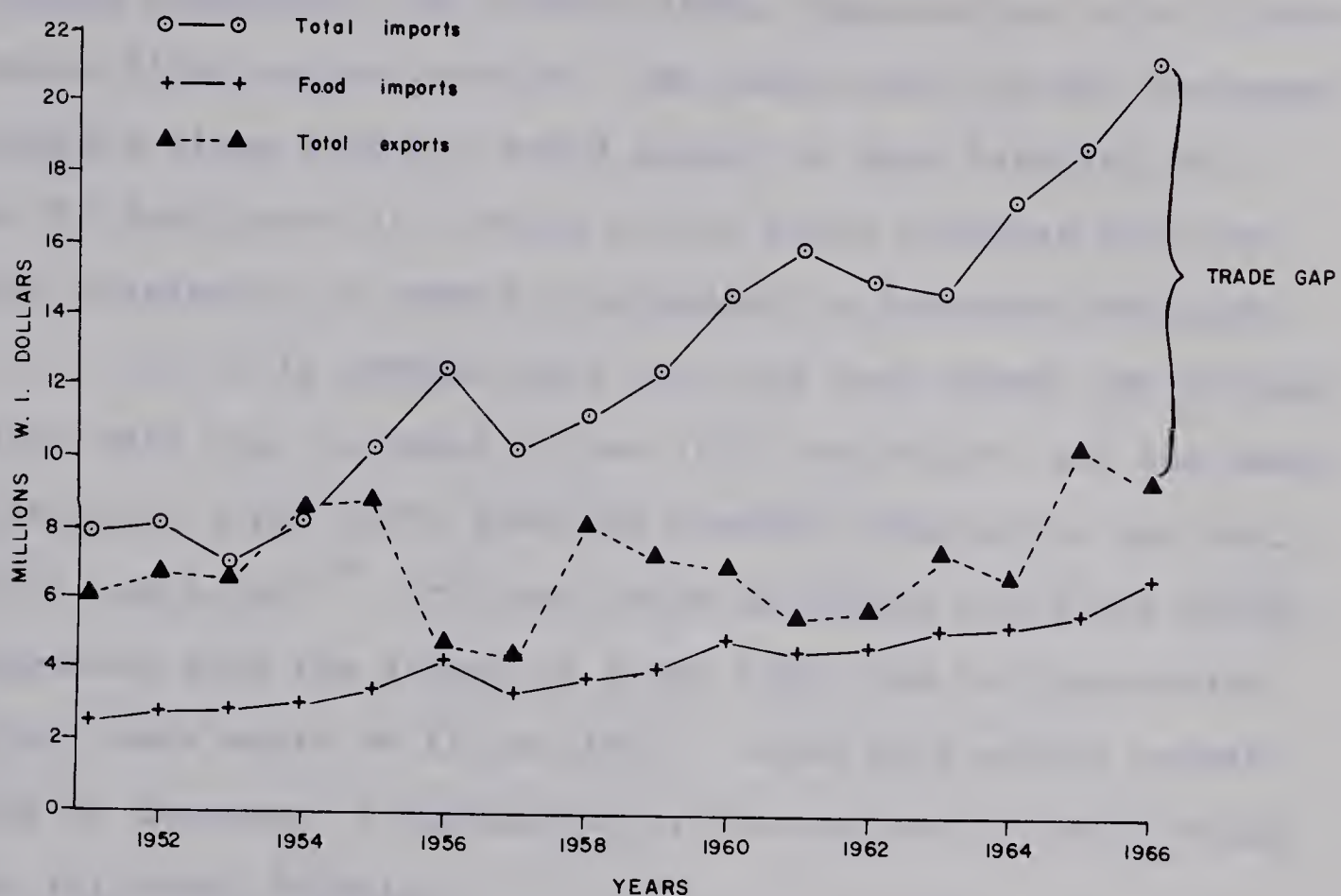


FIGURE 1

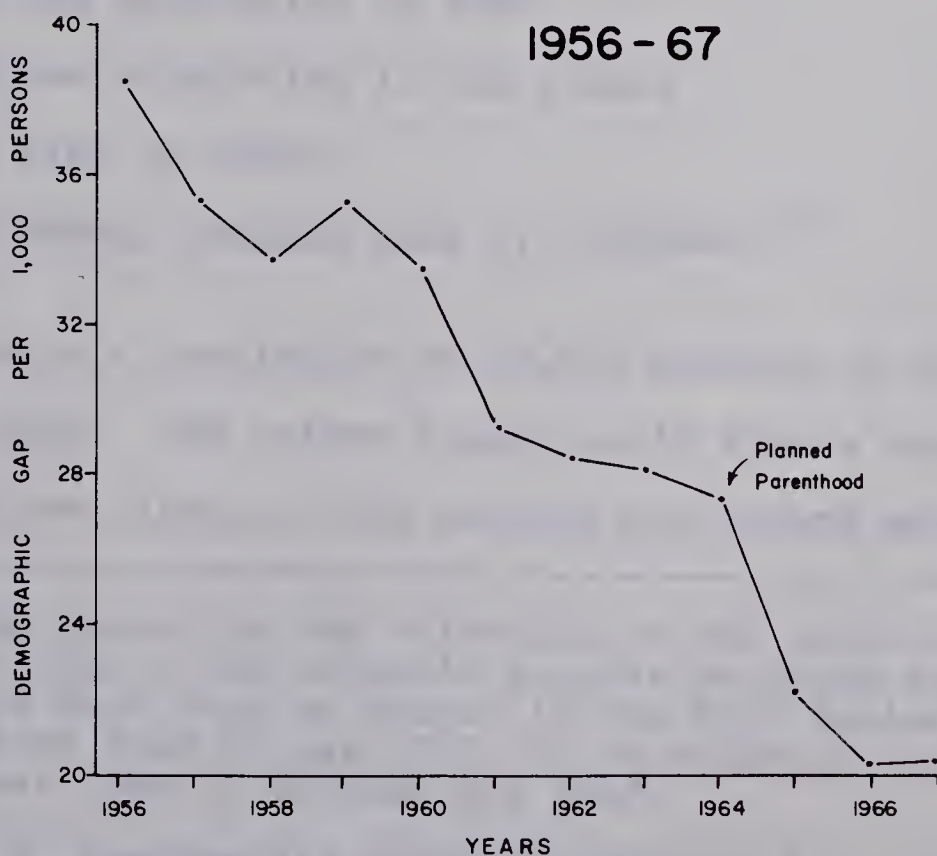


## GRENADA - VALUE OF IMPORTS AND EXPORTS



GRAPH 1

## GRENADA - DEMOGRAPHIC GAP 1956 - 67



GRAPH 2





Planned Parenthood, an international organization which disseminates birth control advice. The death rate too had decreased steadily since 1960 but would appear to have levelled off. As the death rate is already low by North American and European standards, it cannot be expected to decrease much more.

If it is assumed that over the next decade the average birth rate will be about 25 per 1000 population, and the death rate about 8 per 1000, then the average demographic gap would be 17 per 1,000.<sup>14</sup> If there is an allowance for a net annual migration from the island of 5 per 1000, the net population growth rate would be 12 per 1000. Using this annual percent rate of increase, a population projection can be made, using the following formula:

$$P_1 = P_0 \left(1 + \frac{r}{100}\right)^t$$

where  $P_0$  is the population in 1966

$P_1$  is the population in the future

$t$  is time in years

$r$  is annual percent rate of increase.<sup>15</sup>

This results in a population of 97,500 persons in 1971 and 103,500 in 1976. The latter figure would give a population density for the island of 825 persons per square mile, or 1,480

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<sup>14</sup>The basis for the selection of the birth rate average is that with 63% of the island's population being Roman Catholic, and the fact that no island in the West Indies has a birth rate less than 20 per 1000, it is unlikely that the rate would be lower than 25 persons per year.

<sup>15</sup>U.N. Demographic Yearbook 1965, p. 1.





persons per square mile of cultivated land.

By looking ahead to such population growth the urgency to effect a more intensive land use and food-crop production is the greater.

4. Tourism has been expanding rapidly on the island since the late 1950's. Table II below illustrates this growth.

TABLE II TOURISTS IN GRENADA

Year	1958	1959	1960	1961	1962
No. of Tourists	5,216	7,326	7,909	7,970	8,181
Year	1963	1964	1965	1966	
No. of Tourists	9,318	11,188	13,850	18,135	

Source: The Grenada Tourist Board, St. George's, Grenada.

This is a promising industry and revenue earner, with the island having many of the essential ingredients, i.e. good beaches, climate, scenery, and a reputation for West Indian cuisine and friendliness. After Antigua Grenada is the most popular tourist island in the Leeward and Windward groups. For the island to reap maximum benefit from this industry, local food-crop production must be the main supplier of edibles. There should be less reliance upon food and other imports to meet this growing tourist demand.

5. The continuance of an increasingly large adverse trade balance in the economy which has to be supplemented by substantial grants-in-aid from the British government, suggests the need for internal economic reorientation. The principal exports of this territory are nutmegs, cocoa and bananas, (in



order of export value for 1965). These accounted for 97% of the value of total exports. The imports are varied, but foodstuffs represent over 30% by value. (Graph 2 and Table II of the appendix.) Such an unfavourable economic situation seems unjustified and reflects legislative, agricultural, and other inadequacies.

It was for these reasons that Grenada was thought to be an appropriate island for study of domestic food-crop production and marketing. Subsequent field research on the island supports this view point.





## CHAPTER TWO

### THE GRENADIAN PHYSICAL ENVIRONMENT

#### Location and Size.

Grenada is a roughly elliptical-shaped island located in the south-east corner of the Caribbean Sea. It is the most southerly of the Windward Islands, being 68 miles south-west of St. Vincent, and 90 miles north of Trinidad and the South American mainland. It is located between the parallels of  $11^{\circ}59'$  and  $12^{\circ}15'N$  latitude, and between meridians  $61^{\circ}35'$  and  $61^{\circ}48'W$  longitude. It is 21 miles in length, and 12 miles at its greatest width, and has an area of 119 square miles (Figure 2). The east coast of the island is pounded by the heavy swells of the Atlantic Ocean, while its west coast is washed by the Caribbean Sea. With its rugged relief, giving spectacular scenery, its wonderful beaches and a not uncomfortable climate, it approaches most people's concept of a tropical paradise.

Despite its size Grenada displays a considerable areal differentiation with respect to climate, vegetation and soils. The variations in these phenomena reflect the nature of the geology and topography. It is under these five headings that the physical environment of the island will be outlined.





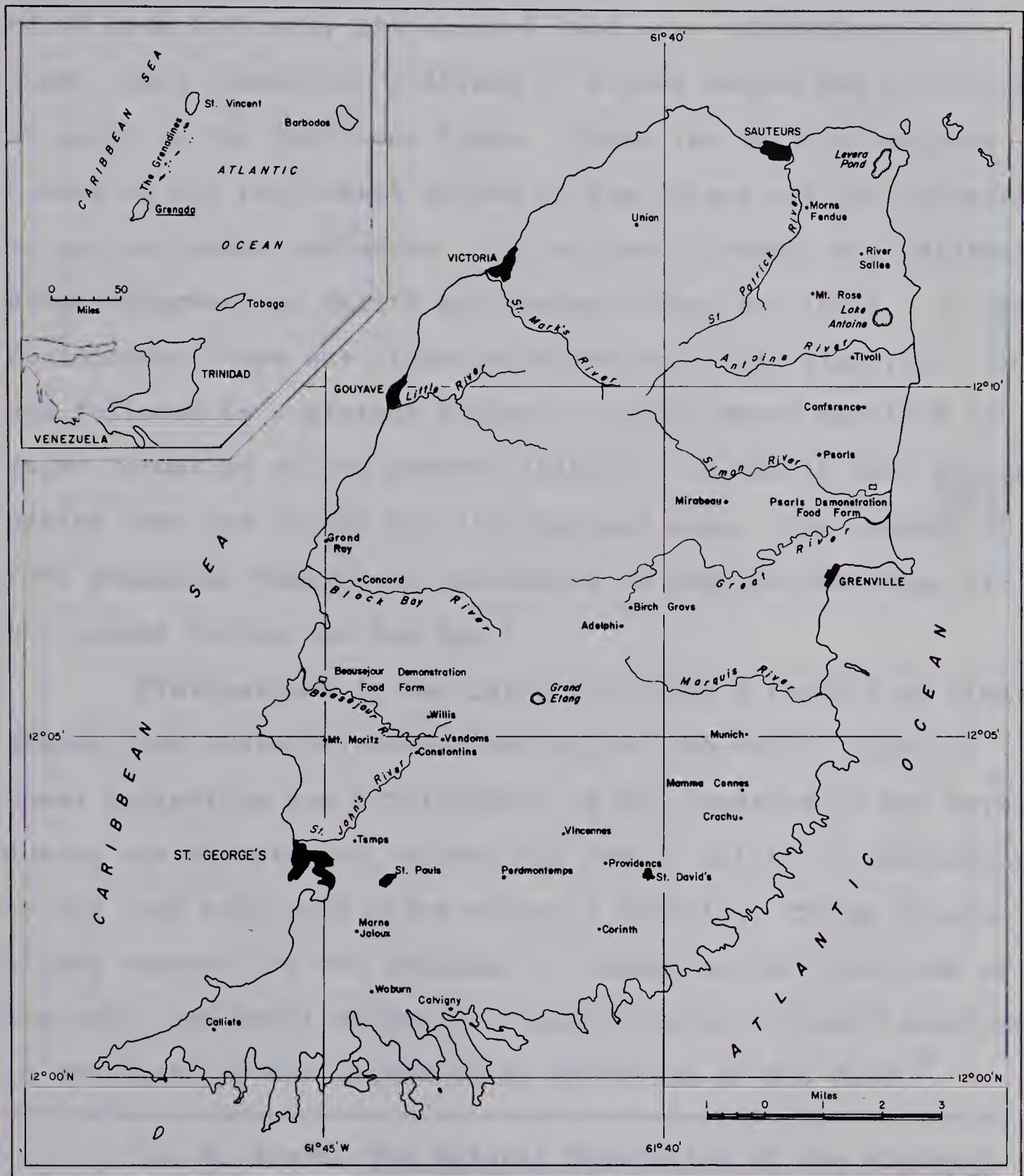


FIGURE 2. GRENADA LOCATION MAP



## Geology

Grenada was built by a series of volcanic eruptions which laid down ash, breccia and lava on a sedimentary platform. This foundation platform of folded shales and siltstones, is known as the Caribbean Ridge. Today its only outcropping occurs at the north-east corner of the island and is referred to as the Levera sediments. During the Pliocene, the Caribbean Ridge underwent an uplift and emerged above sea level. In the Pleistocene there was slight subsidence of this ridge, but this was followed by a violent volcanic orogeny which resulted in major formation of the present island.<sup>1</sup> It was in this geologic period that the island had its greatest area. The present 60 feet submarine contour is considered to outline the shape of the island during the Ice Age.<sup>2</sup>

Fluctuations in sea level have been a feature of Pleistocene and Post-Pleistocene geology of the world. Some of these variations are attributable to the lowering of sea level during the Pleistocene, others are due to uplift or subsidence of the land with each major volcanic eruption. These fluctuations account for the presence of raised marine platforms of ash beds, and small deposits of marine coralliferous limestone in the north of the island at an elevation of 600 feet.<sup>3</sup>

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<sup>1</sup>J. S. Beard, The Natural Vegetation of the Windward and Leeward Islands, Oxford, Clarendon Press 1949, p. 20.

<sup>2</sup>C. Wright, Report by a New Zealand Pedologist on the Geology of Grenada, n. pub., n.p.

<sup>3</sup>Grenada Handbook, 1946, Barbados, Advocate Co., p. 18.







In Recent times the coastline from Point Salines to Bacolet Point is sinking with the result that a ria coastline with well defined embayments, peninsulas and islands, has been formed. The north coast is rising, and marine terraces about Sauteurs give evidence of this. The axis for these movements is the fault line (Figure 3) which passes through St. George's, Grand Etang and Lake Antoine. The land to the north of this fault line is considered to be rising, that to the south, subsiding.

It is along this fault line that the principal volcanoes were active in the Pleistocene. St. George's harbour, Grand Etang and Lake Antoine are all volcanic craters or the remains thereof. Minor centres of eruption are found near Belvidere and Plaisance estates. These volcanoes were predominantly pumice vents of the explosive type and issued forth pyroclastic rocks with comparatively little lava. The few narrow lava tongues that advanced down valleys in Grenada give rise to andesites, dacites, and basalts. The coastal area is covered with pyroclastic material, agglomerates, ashes, and tuffs.<sup>4</sup> All the volcanic rocks have similar mineralogical composition in that they are basic, although in the west-central and north-west part of the island, the rocks have a less basic chemical composition.<sup>5</sup>

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<sup>4</sup>Wright, op. cit.






<sup>5</sup>K. C. Vernon, H. Payne and J. Spector, Soil and Land-Use Surveys No. 9 Grenada, Imperial College of Tropical Agriculture, Trinidad 1959, p. 5.

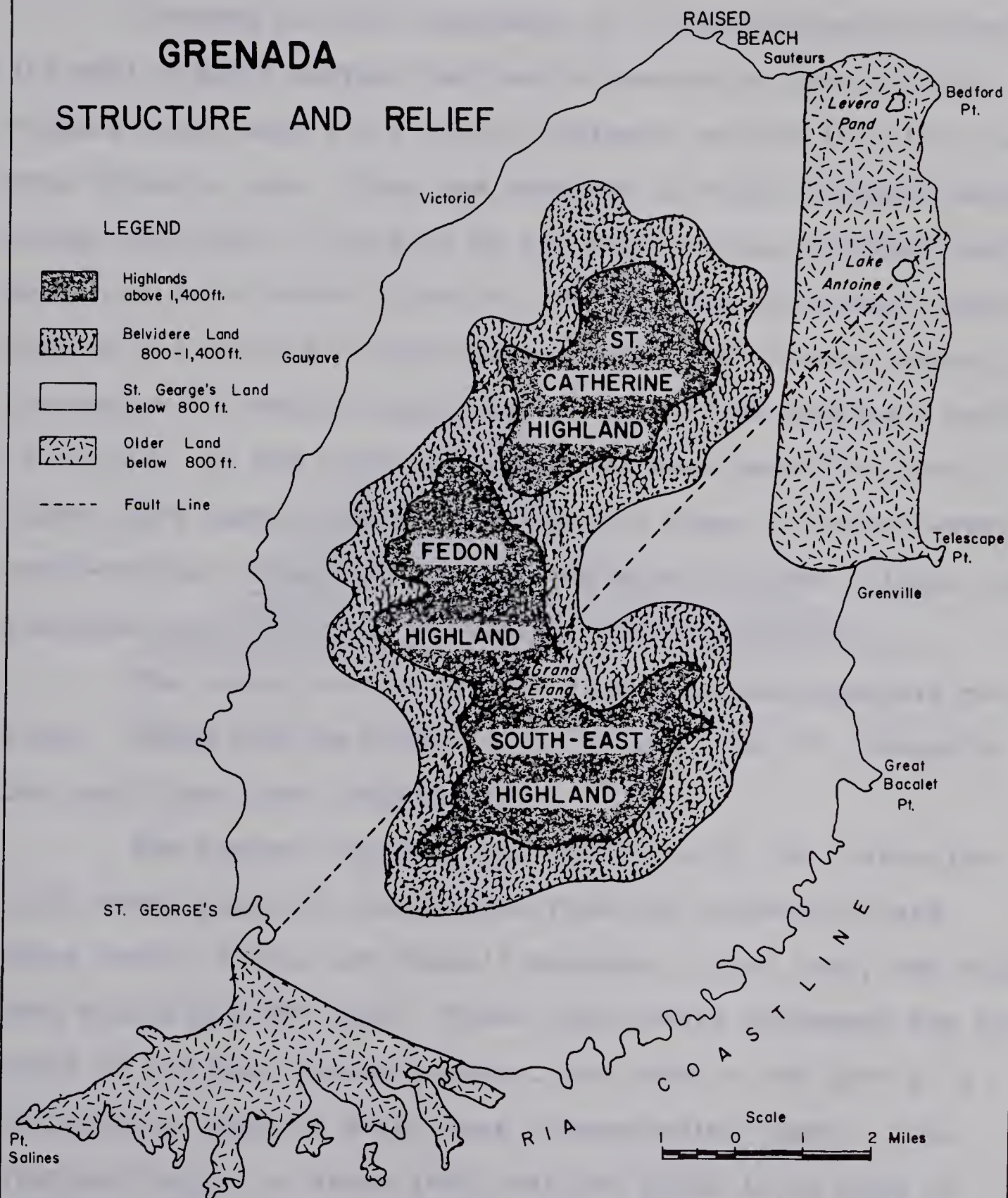


# GRENADA

## STRUCTURE AND RELIEF

### LEGEND

-  Highlands above 1,400 ft.
-  Belvidere Land 800-1,400 ft.
-  St. George's Land below 800 ft.
-  Older Land below 800 ft.
-  Fault Line



Source: Wright, C., Report on the Geology of Grenada

FIGURE 3





## Topography

Grenada has the topography of a young volcanic island. Its well watered surface has been dissected by fast flowing streams which have cut a radial drainage pattern into the central volcanic core. This has resulted in steep V-shaped valleys being ubiquitous. The axis of the highland core extends north-south and is situated closer to the west and north-west coast, than to the south and south-east coasts. On the west coast the truncation of various headlands by the sea has created a series of cliffs. To the south and along the east coast the land slopes more gently towards the Atlantic Ocean. The east-west cross-section (Figure 4) through the middle of the island, illustrates the difference on either side of the axis.

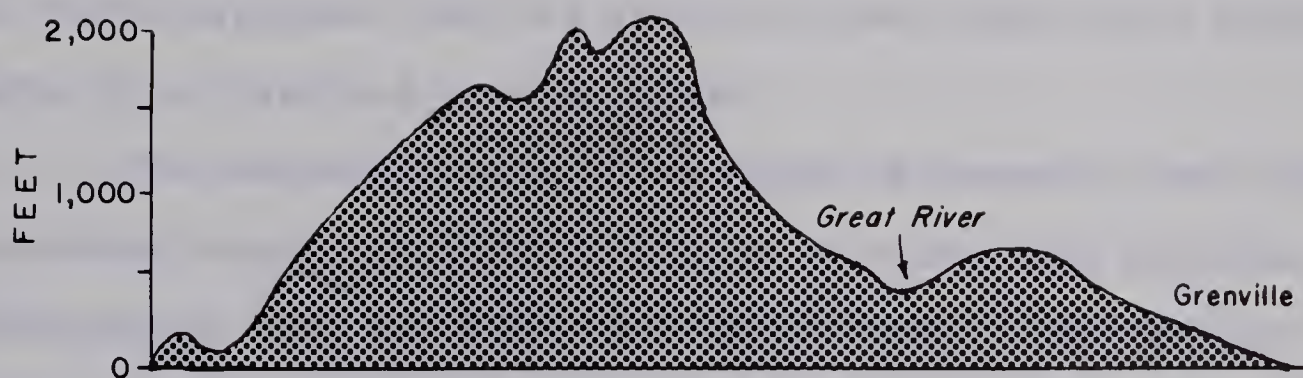
The island can be divided into four physiographic regions. These are the Highland, Belvidere Land, St. George's Land and Older Land (Figure 3).

The highest point of the island is Mt. St. Catherine, 2,756 feet, situated three miles from the northwest coast. Other peaks of note are Fedon's Mountain, 2,509 feet, and South-East Mountain, 2,347 feet. These three peaks represent the products of the most recent orogeny, and each is the core of a surrounding highland which bear corresponding names. This highland region is above 1400 feet and hence is an area in which the rainfall is in excess of 120 inches. The majority of streams running off these highlands are consequent.

The next physiographic region is the older rock known







WEST - EAST CROSS SECTION THROUGH GRENVILLE

VERTICAL EXAGGERATION 85 X

FIGURE 4



as the Belvidere land.<sup>6</sup> This is between 800 feet and 1400 feet, and has deeply entrenched rivers, with subsequent stream development giving the landscape a more dissected appearance than the highlands.

The St. George's Land is below 800 feet and occupies much of the remainder of the island. Here the valleys are well defined, but still young, as there is little bottom land. Small alluvial flats are found at the mouths of most rivers, and these represent the few areas of level land which exist. There is no distinct coastal plain.

The eastern coastal area north of Grenville and the south-west corner of the island are of older rock material. Consequently they are more thoroughly eroded, and are the only parts of the island considered to have a mature landform.<sup>7</sup>

The topography is mainly ill-suited to agriculture. Twenty-three percent of the island, i.e. 17,100 acres out of 76,200, has slope greater than 30° from the horizontal, and only 5%, i.e. 3,675 acres, has a slope less than 5°. The rugged nature of the landscape has had a significant influence in the determination of agricultural techniques and crops.

### Climate

Most of the island has a sub-humid tropical climate

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<sup>6</sup>Wright, op. cit.

<sup>7</sup>Ibid.

<sup>8</sup>Vernon, Payne, and Spector, op. cit., p. 32.





which is characterized by a summer maximum of precipitation, and generally high (over 80°F) year round temperatures. The Köppen classification divides the island into three regions. Af categorises by far the largest area, and refers to most of the island above 500 feet. The coastal periphery below 500 feet usually has less than 2.4 inches of rain in March and is Aw. There is a small area of BSh or tropical steppe along the extreme south coast.

Temperature variations over the island are in accordance with altitude. The low coastal lands have a range of temperature between 78°F and 90°F during the day and between 65°F and 75°F during the night.<sup>9</sup> In the highlands the corresponding temperatures will be as much as 7° cooler. Such temperatures permit an all year round growing season.

Table III shows a typical seasonal range in temperatures for areas below 600 feet.

TABLE III MEAN ANNUAL TEMPERATURE (°F)

St. George's, Richmond Hill, Elevation 509 feet.

J	F	M	A	M	J
78.5	78.3	79.7	80.8	81.3	81.0
J	A	S	O	N	D
80.7	81.9	81.7	82.7	80.7	79.0

Mean for year 80.5

Source: Wennstedt, F.L., World Climate Data, Latin America and the Caribbean, n. pub., 1961, p. 86.

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<sup>9</sup>F. Key, This is Grenada, n. pub., n. date, p. 25.



The rainfall regime divides the year into alternate dry and wet seasons. The former usually extends from January until the end of May; the latter, for the remainder of the year. This pattern is constant for the island as a whole, regardless of the considerable variation in the amount of rainfall. This variation correlates closely with altitude as can be seen from a comparison between the map of relief (Figure 3) and the map of mean annual rainfall (Figure 5). The mountainous interior of the island averages in excess of 140 inches. In the exceptionally wet year, 1938, Grand Etang recorded 246.63 inches.<sup>10</sup> The low lying coastal land in the south and east receives less than 40 inches. In 1942 Point Salines in the south-west corner of the island received as little as 22.43 inches.<sup>11</sup>

In Table IV the seasonal distribution of rainfall can be seen for stations on opposite sides of the island; the Botanical Gardens, near St. George's in the west, and the Mirabeau Agricultural Station in the east (Figure 2).

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<sup>10</sup>Grenada Handbook, op. cit., p. 289.

<sup>11</sup>Loc. cit.



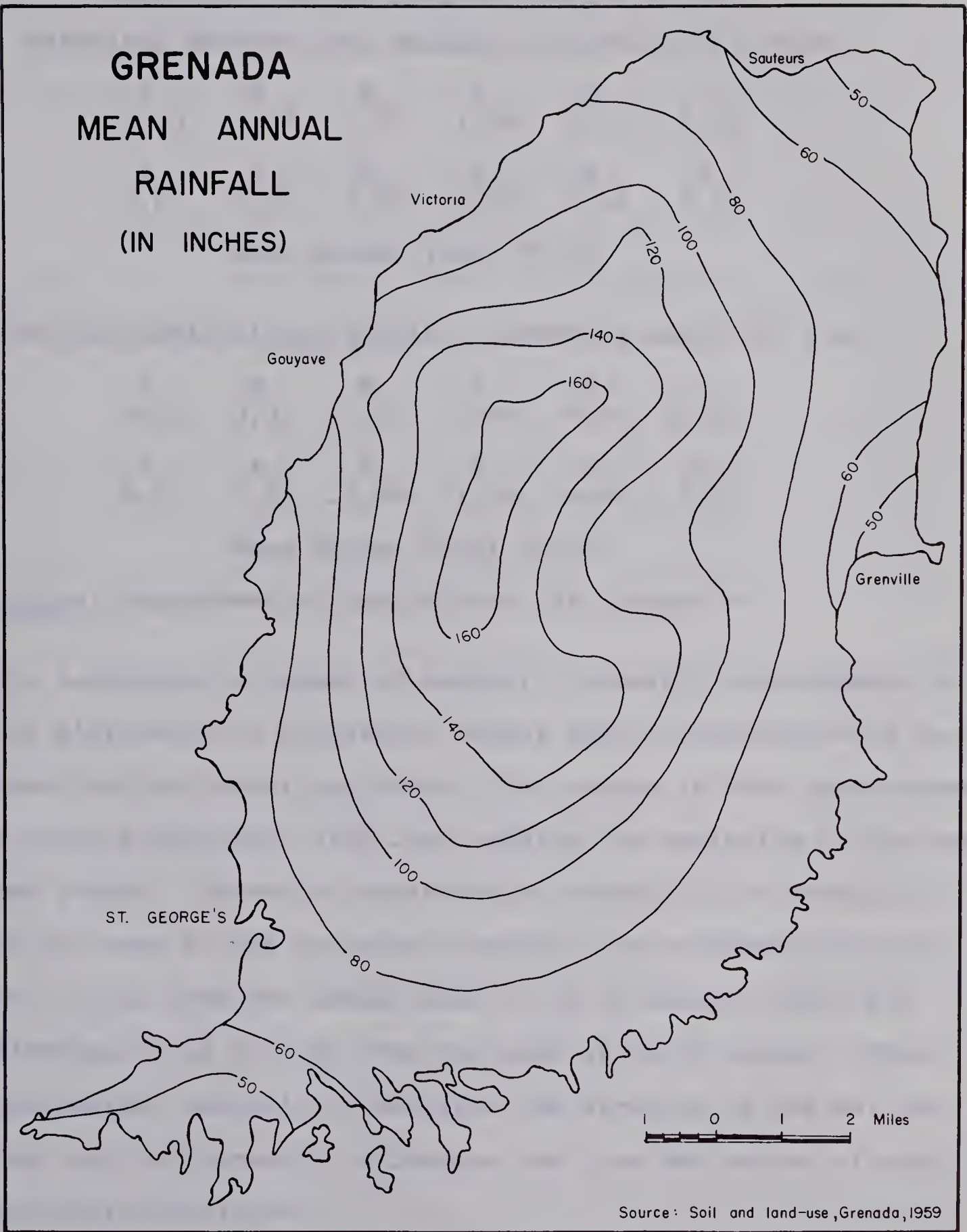


FIGURE 5





TABLE IV MEAN ANNUAL RAINFALL IN INCHES

Botanical Gardens, St. George's, Elevation 155 Feet.

J	F	M	A	M	J
3.63	3.27	1.74	1.96	2.56	8.90
J	A	S	O	N	D
9.07	9.96	7.48	9.62	8.46	5.65

Mean Annual Total 72.30

Mirabeau Agricultural Station, Elevation About 600 Feet.

J	F	M	A	M	J
4.51	3.33	2.70	3.60	4.41	11.33
J	A	S	O	N	D
9.73	9.95	10.24	11.59	10.88	8.20

Mean Annual Total 90.48

Source: Department of Agriculture, St. George's.

The variation in amount of rainfall is mainly attributable to the difference in elevation, rather than to location with respect to the prevailing winds. The regime in both cases shows a close similarity, with June marking the beginning of the real wet season. There is considerable variability in rainfall. In the case of the Botanical Gardens, the standard deviation is  $\pm 16.32$  from the annual mean of 72.30 inches, while for Mirabeau it is  $\pm 16.82$  from the mean of 90.48 inches. This substantial variability reflects the duration of the wet season, and this greatly influences the time and nature of agricultural activities.

Relative humidity and percentage of cloud cover are affected by the wet season as Table V indicates.



TABLE V RICHMOND HILL, ST. GEORGE'S

<u>Relative Humidity</u>												
J	F	M	A	M	J	J	A	S	O	N	D	Mean
75	73	71	72	74	77	77	77	77	79	78	76	76
<u>Cloudiness in Percent</u>												
34	32	32	38	45	52	44	45	39	41	41	37	40

Source: R.D.C. Ward, and C.F. Brooks, Westindien: Climatology of the West Indies, Berlin 1934, pp. 35-36.

The fairly high relative humidity helps to retard evapotranspiration and makes rainfall more effective. The amount of cloud cover is not significantly high enough as to restrict the light intensity required by the major crops cultivated.

Situated in the northern tropics, the island has the north-east trades as the prevailing wind. During the dry season these winds are particularly strong, while the wet season has generally lighter winds and occasional heavy storms. Fortunately, the island is south of the main hurricane tracks, and in post Columbian times the island has only experienced one, that of Janet in September, 1955. Severe storms with heavy rains on the edge of north passing hurricanes have caused considerable damage in 1768, 1780, 1817, 1831, 1872, 1877, 1921<sup>12</sup> and 1963.

Climate accounts for a great deal of the variations which are found with respect to food-crop production on the

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<sup>12</sup>Ibid., p. 91.





island. The temperatures are such as to permit year round growth. However, the dry season is sufficiently long in most growing areas to restrict the cultivation of certain crops.

### Vegetation

Grenada has in the past been under forest cover of various types. According to Beard the type of forest cover was determined by the factor of increasing exposure to the wind.<sup>13</sup> Thus on the most exposed slopes the cover is low lying elfin woodland and palm brake, while in the sheltered valleys and lowlands the tallest Lower Montane Rain Forest exists. Factors such as the amount and seasonality of rainfall give rise to variation in the natural vegetation. The most significant consequence of this seasonality and distribution of rainfall is the presence of savannah in the drier areas of the island.

A cross-section of a high oceanic island (Figure 6) shows the general arrangement of vegetation zones as found on Grenada.

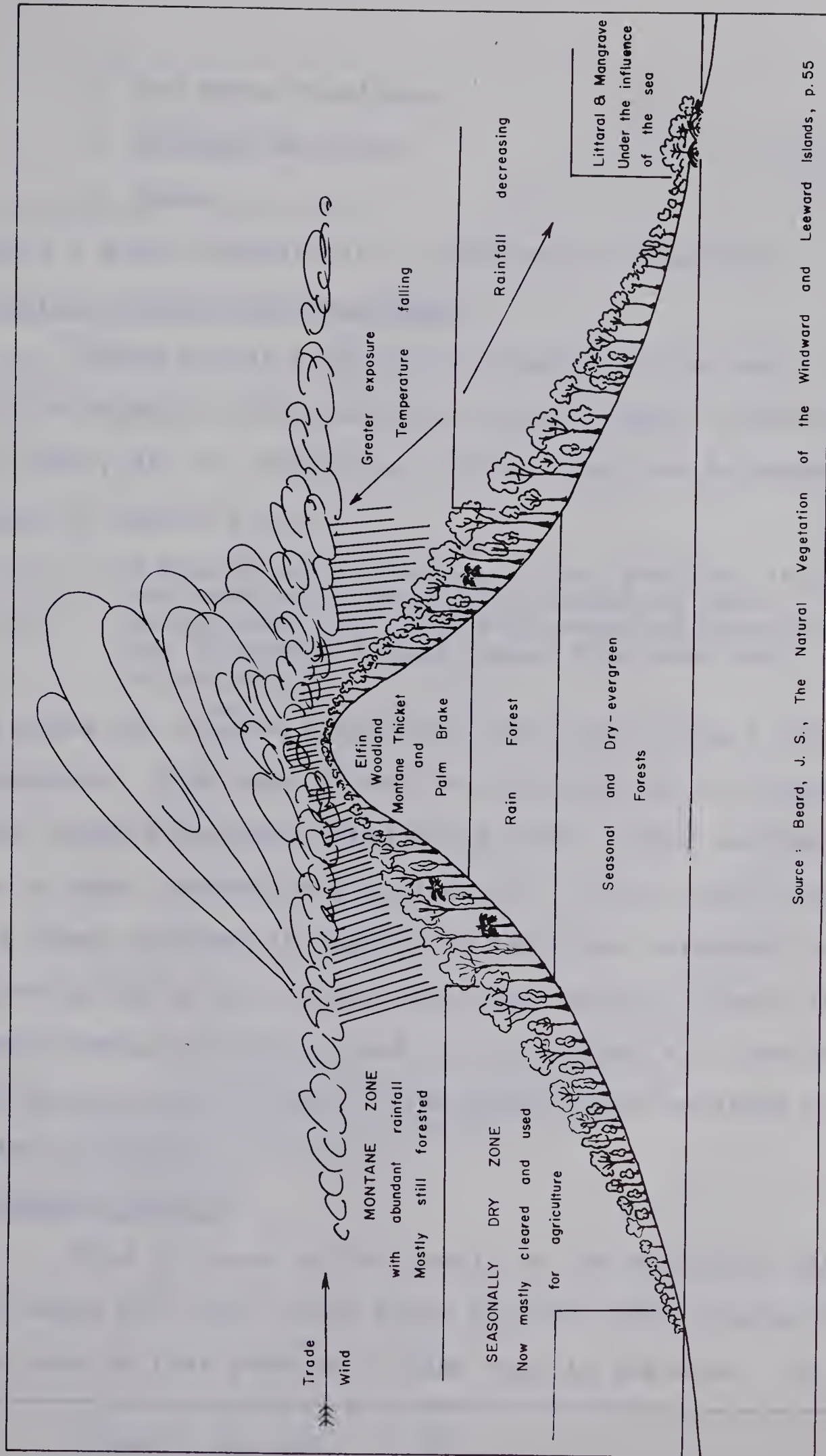
Beard classifies the vegetation types of Grenada under seven major headings. These are described below:

1. Elfin Woodland and Palm Brake.
2. Montane Thicket.
3. Rain Forest and Lower Montane Rain Forest.
4. Secondary Rain Forest - formerly Evergreen and Semi-Evergreen Forest.

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<sup>13</sup>Vernon, Payne, Spector, op. cit., p. 8.





Source : Beard, J. S., The Natural Vegetation of the Windward and Leeward Islands, p.55

FIGURE 6. DIAGRAMMATIC CROSS-SECTION OF A HIGH OCEANIC ISLAND, SHOWING TYPICAL ARRANGEMENT OF VEGETATION ZONES





5. Dry Scrub Woodlands.
6. Littoral Woodland.
7. Swamp.

Figure 7 shows distribution of the major categories.

1. Elfin Woodland and Palm Brake

These forest types are contiguous in the main. The elfin woodland is found on the principal peaks of Grenada above 2000 feet, Mt. St. Catherine, Fedons Camp and Southeast Mountain. It consists of a

a single woody stratum, a low, gnarled, interlaced and impenetrable growth of small trees 10-20 feet high with rambling branches and distorted trunks loaded with moss and epiphytes.<sup>14</sup>

The palms are stunted with their leaf tips having a scorched appearance. Most tree crowns are distorted by the wind with their topmost branches often being dead. Ferns and tall grass give a dense herbaceous ground cover. On the lower slopes palm trees increase in number and when they represent two-thirds of the total forest, palm brake exists. There is no stratification of tree height in this forest with the average tree height being 40 feet. The ground cover consists of a variety of ferns.

2. Montane Thicket

This is found on the summit of the principal watershed above 1000 feet, from Morne Qua Qua south towards Mt. Sinai and on less prominent ridge tops in the area. It is

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<sup>14</sup>Beard, op. cit., p. 72.





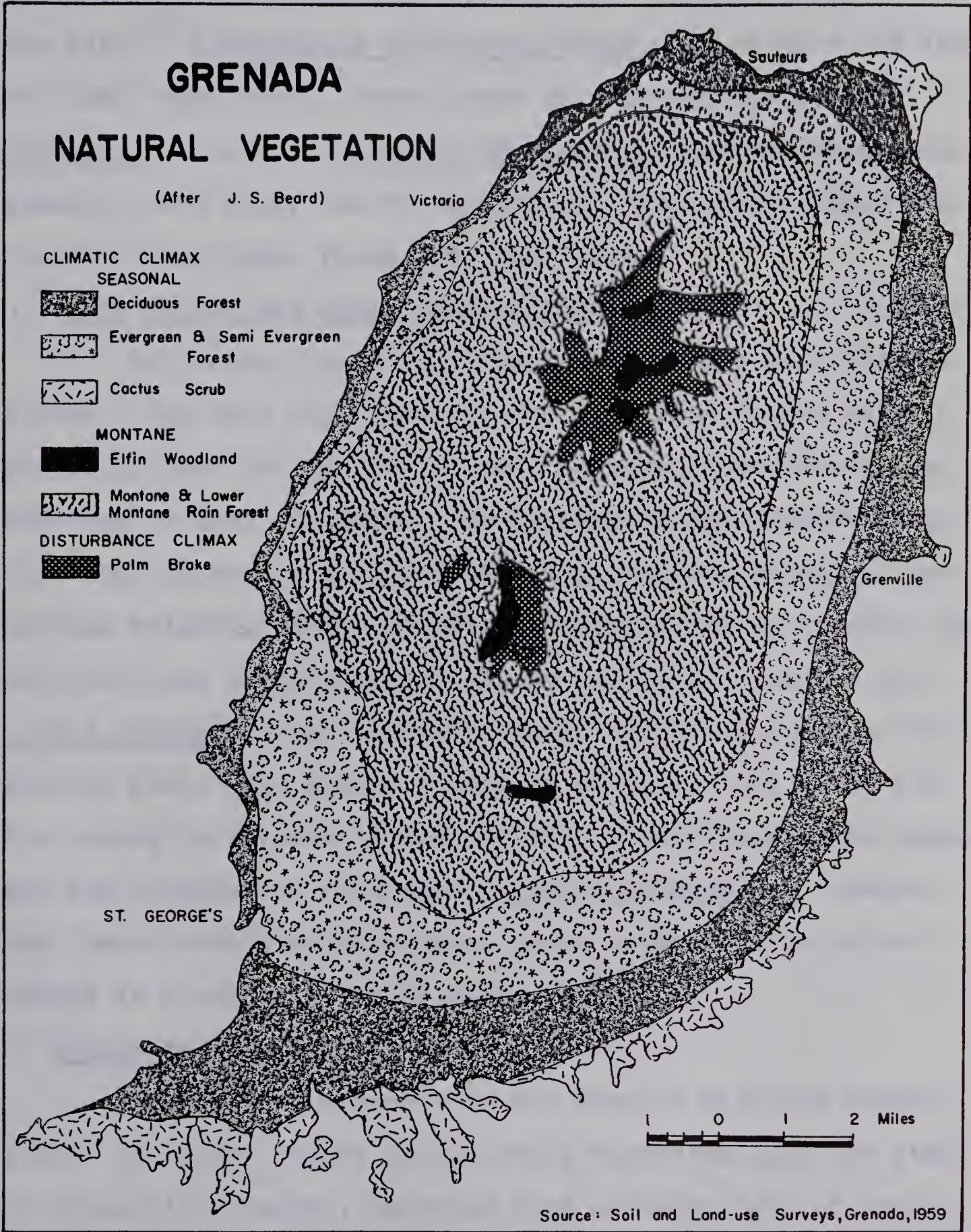


FIGURE 7





found up to an elevation of 1,900 feet. The principal tree is the Bois,<sup>15</sup> Micropholis chrysophylloides. It is also the largest tree found here. Other trees of note are the Goyavie, Myrtaceae, Bois gris, Hicania ternatensis, and Mountain Palm. There is much moss, but few epiphytes. The ground cover consists of seedlings, ferns and razor grass.

### 3. Rain Forest and Lower Montane Rain Forest

In Grenada these two classes can hardly be differentiated. The very tall trees of the true rain forest merge gradually into the less tall Lower Montane forest where the exposure to wind increases. It is only on the exposed ridge tops that growth is hindered and gives reduced growth of the montane thicket. These forests are stratified or tiered. The tallest trees being composed almost solely of Grammier, Dacryodes excelsa. They create a closed canopy at a height of 100-110 feet. The middle storey is at 40-80 feet while the low storey is between 15 and 30 feet. Both these latter storeys are composed of Bois gris, Hicania ternatensis. Below the lowest tree stratum a dense scrub exists, while on the ground is a scanty cover of ferns.

### 4. Secondary Rain Forest.

This forest prevails in the wake of shifting agriculture. The cover varies considerably depending upon the stage of succession reached, anything from a "dense crop of herbaceous Heliconia bihai to young forest."<sup>16</sup>

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<sup>15</sup>This is the local name.

<sup>16</sup>Ibid., p. 156.





## 5. Dry Scrub Woodland

This secondary forest is limited to the zone of lower rainfall distribution on the island. The best example is atop Morne Delice. The trees are varied, with mahogany, Swietenia mahagoni, being one of the dominant species. Grass and scrub compose the undergrowth.

Another area where dry scrub woodland is found is the Point Salines Peninsula. This consists of rough grazing land with thorn bush. The trees are small, being only 40 feet in height, and consist mostly of the worthless Gum tree, Bunsera simaruba. These are found mainly on rocky hills. Acacia thorn bushes (notably Acacia milotica, and Acacia farnesiana) have colonized the poor pasture with the prickly pear, Opuntia dillierii, and columnar cacti, Cephalocereus.<sup>17</sup>

Littoral woodland and swamp are found in insignificant amounts along the coast.

The pattern of natural vegetation indicates the effect elevation has on growing conditions. The region of Secondary Rain Forest corresponds closely with the main food-crop producing areas on the island; that of the Rain Forest and Lower Montane Rain Forest to principal tree crop zones.

## Soils

On an island which has a youthful geologic history, nearly uniform mineralogical parent rock, and large variation

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<sup>17</sup>Ibid., p. 158.



in annual rainfall with a marked seasonality, it is not surprising that climate and drainage play a major role in soil formation.

In the wetter areas of Grenada, where there is intensive weathering and leaching of the parent material, the soils are kaolinitic latosolic 'red earths', of moderate to low base.<sup>18</sup> (Figure 8). The profile of these 'red earths' has a dark brown A-horizon due to the high humic content. This grades gradually into bright red clayey soil which is acidic, crumbly, friable and porous to a great depth.<sup>19</sup> In drier areas the soils have a darker colour with a higher base status. These are montmorillinitic dark grey "shoal" and less-weathered ash soils. The "shoal" soil has a shallow A-horizon of dark humic clay, with the B-horizon having been sealed by illuviation. It is consequently subject to poor drainage. Intermediate between these two soil groups are the brown earths.

Periodically, Grenada has received showers of volcanic ash from eruptions within the Caribbean "fire belt". The most recent was in 1902 when Mt. Pelée, Martinique, and Mt. Soufriere, St. Vincent, were active. This sprinkling of fresh mineral, enriched the soils, especially those which are most heavily leached.

The principal class of soil composition is clay-loam. Numerous types are present, the main ones are Belmont, Capitol

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<sup>18</sup>Vernon, Payne and Spector, op. cit., p. 35.

<sup>19</sup>The Grenada Handbook, op. cit., p. 19.





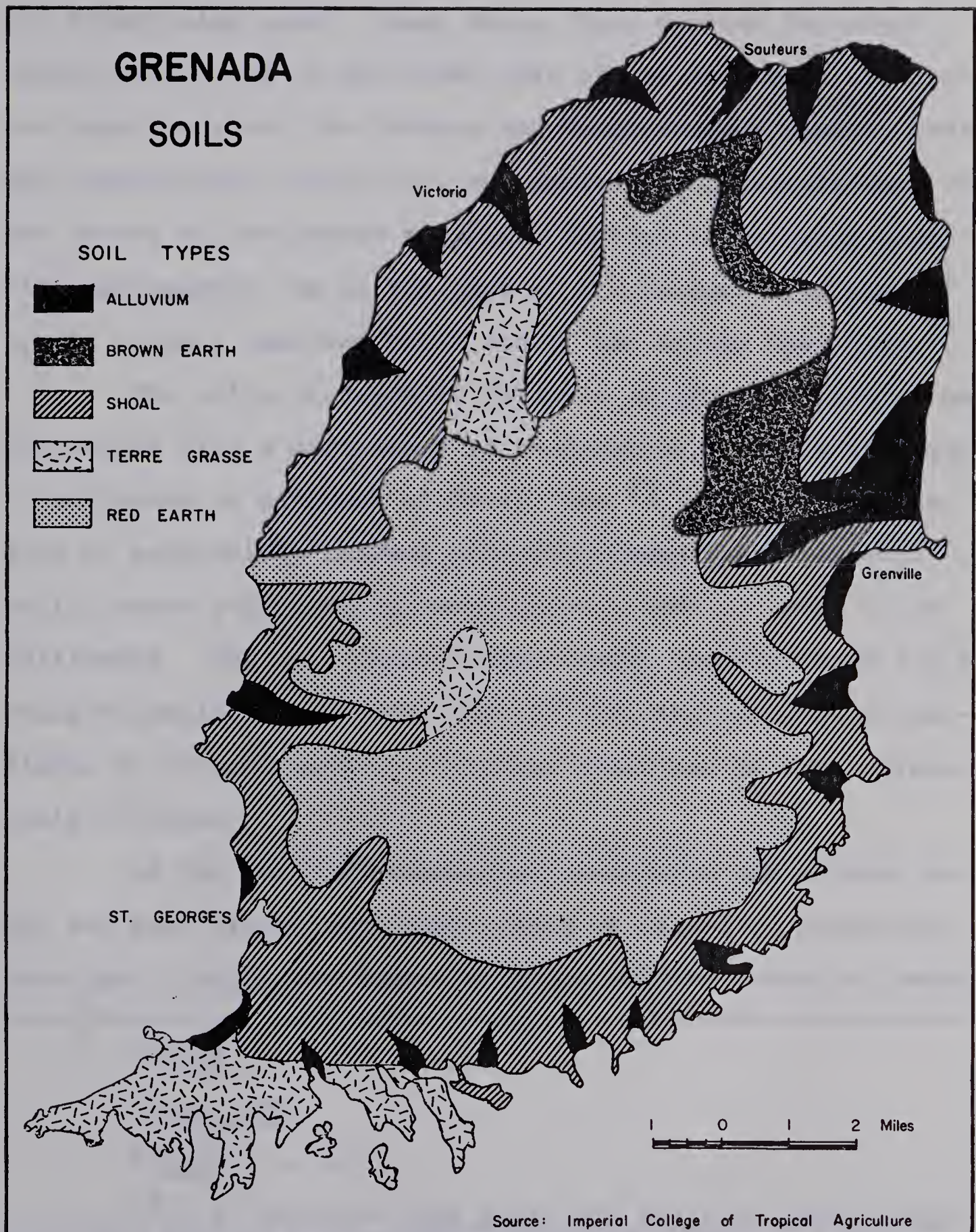


FIGURE 8





and Woburn clay loam. These three types account for about 62,500 acres, 83% of the total area of the island.<sup>20</sup> Of lesser importance are the Hartman and Perserverance clays. Drainage, erodibility, fertility, and agricultural utility vary with the nature of the parent material, whether it be basic andesite agglomerate, as in the case of the Belmont Clay loam,<sup>21</sup> or the loosely cemented basic ash of the Woburn Clay Loam.<sup>22</sup>

The soils of degraded volcanic origin have general basic nature with a deficiency of phosphorous. Only a few have a deficiency in nitrogen or total lime.<sup>23</sup> With the application of appropriate manures and fertilizers these volcanic soils become sufficiently fertile for a host of crops to be cultivated. The fact that the area under crops is high for a young volcanic island, over 59% of the total area, bears testimony to an agricultural potential which can be more effectively utilized.

Of the physical phenomena, topography and climate are the two most significant with regard to food-crop production. More specifically the degree of slope and the amount of annual

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<sup>20</sup>Ibid., p. 33.

<sup>21</sup>Loc. cit.

<sup>22</sup>Ibid., p. 40.

<sup>23</sup>J. B. Harrison, The Rocks and Soils of Grenada and Carriacou and the Agricultural Chemistry of Cacao, London, 1896, p. 22.



rainfall determine to a large extent the nature of the crops cultivated and the farming techniques used.





### CHAPTER THREE

#### HISTORICAL DEVELOPMENT OF FOOD CROP FARMING ON GRENADA

The origins of food-crop production on Grenada date back to Ameridian settlements on the island. Agriculture was practiced by both the Arawaks and Caribs, who migrated from the rainforest areas of South America by way of Trinidad. The Arawaks settled first, and were predominantly agriculturists whose customary dish was cassava. (The name Arawak means cassava eaters.)<sup>1</sup> In addition they cultivated maize, sweet potatoes, chili peppers, peanuts, tobacco, and cotton. These crops were grown on land cleared by the slash and burn method and cultivated by,

. . . constructing round heaps or mounds of earth, firstly to loosen the soil, secondly to protect the roots against the dry season, and thirdly for composting with shovelled ashes.<sup>2</sup>

Although agriculture was of the shifting type, the use of compost made abandonment of plots less frequent. To supplement their vegetable diet they used tropical fruits such as the guava, custard apple, mamey apple, papaw, alligator pear,

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<sup>1</sup>G. T. Barton, The Prehistory of Barbados, Bridgetown Advocate Co. Ltd., 1953, p. 72.

<sup>2</sup>E. Williams, History of the People of Trinidad and Tobago, Port-of-Spain, P.N.M. Publishing Co. Ltd., 1962, p. 1.



star apple and pineapple.<sup>3</sup> When the Arawaks were conquered by the belligerent Caribs during the thirteenth century, the agricultural practices were maintained by the Arawak women who became virtual slaves to the Carib men. The Arawak men were slaughtered. It is likely that agriculture under the Caribs received less emphasis than previously, as they were constantly on the move waging battle in the Lesser Antilles.

The next era in Grenada's food crop history begins in 1638 with the French attempting to colonize the island. It was not until 1650 that they succeeded in subduing the warlike Caribs still resident there. With the annihilation of the Carib population by 1654, the French developed the island agriculturally over the following one hundred and eight years during which it remained in their control. The suitability of the island for cultivation was soon recognized. In 1700 Pere Labat, a Dominican priest, visited Grenada and observed that the "island is certainly a very good one, and if it were populated and cultivated would produce a great deal."<sup>4</sup>

The first indication of the extent of food-crop production is given in the 1774-84 edition of the "Encyclopaedia Britannica" which states that for the year 1753,

. . . the provision consisted of 5,740,450  
trenches of cassava, 933,596 banana trees  
and 145 squares of (sweet) potatoes and yams.<sup>5</sup>

<sup>3</sup>Ibid., p. 2.

<sup>4</sup>R. P. Devas, The History of the Island of Grenada, (1650-1950), n. pub., p. 7.

<sup>5</sup>Ibid., p. 61.





This produce assisted in supporting the population of 1,262 whites, 179 free negroes, and 11,991 slaves. The latter were worked mainly on sugar, and coffee estates, while a much smaller number tended to cocoa and cotton plants.<sup>6</sup>

Following the Seven Years War, 1756-1763, the island became British, and although it fell into French hands between 1779-83, the island has remained British ever since. The British exploited the island more thoroughly than had their predecessors. In the seventy year period between 1763 and the time of slave emancipation in 1834 the number of slaves more than doubled. In 1834 there were 23,604 slaves to be liberated. This gives some indication of the economic importance the British attached to Grenada.

It was under the shadow of plantocracy that the character of the present day provision grounds had its birth. It was the duty and interest of the plantation owner to see that his slaves were in good physical condition and adequately fed. There were two principal ways in which this might be accomplished. The method usually employed was that considered most economical.

One way was for the estate-owner to give the slaves land on which to produce their own food supply. Under this system it was customary for the estate-owner to supplement the slaves' diet with two pounds of dried fish per week per person. This type of food-crop production was the fore-runner of

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<sup>6</sup>Loc. cit.





peasant agriculture and provision grounds as they now exist. The other method of supporting the slaves was for the plantation owner to ration out imported foodstuffs. This became common practice in the Leeward Islands during late eighteenth century when land and sugar prices became so high that economic pressure could not justify land being given to the slaves for their own provisions.<sup>7</sup> It is thought that pressure on the land was not serious on Grenada, and that with an abundance of land in slope it would seem unlikely that this practice of feeding slaves was common. It is the first method which is of interest and significance in the history of food-crop production.

It is widely reported that the slave appreciated having his "own" plot of land on which to work. These plots or provision grounds were frequently situated on the most unsuitable and least accessible estate land. Sometimes it would be land that required clearing before it could be used. Once the soil had been brought into production by the slaves for their food supplies, it was put into the plantation crop, usually sugar, and the slaves made to clear another area from which to forage their subsistence crops. Other systems were for one parcel of land on the estate to be devoted solely for the slaves to cultivate, or for the slaves to cultivate the vacant sugar cane field in a rotation system. The size of the provision plot the slave had, varied with the position he or she had on the estate

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<sup>7</sup>E. V. Goveia, Slave Society in the British Leeward Islands at the End of the Eighteenth Century, New Haven, Yale University Press, 1965, p. 137.



and the number of children she had.<sup>8</sup> A frequent size of holding for one man would have been half an acre. In addition to this provision plot there was usually a small plot adjoining the home of the slave. This was his kitchen garden, and was also for food crop production. On this land,

. . . they have sweet cassada (sic), lima beans, calialou, tancias (sic), gub-a-gub peas, pigeon pea bushes, and etc. probably in December they sow English pea and plant cabbage for market.<sup>9</sup>

Although these crops would not be found in with every garden, the trend would have been for the more perishable and daily useful vegetables to be cultivated here.

It was on these pieces of property that the field slaves had a means of economic improvement. Through diligent work, and frugal management of the seeds given him by the estate owner, he was able to produce a surplus of crops, which he could sell in the Sunday market in the local town.<sup>10</sup> For the most industrious and business-minded slave, it was his means of purchasing freedom from his master.

The plantations allotted times when the slave might work on his provision plot. Invariably this was Saturday afternoon, or else the whole day once every two weeks, Sunday, special

<sup>8</sup>Carmichael, Domestic Manners and Social Conditions of the White, Coloured and Negro Population of the West Indies, Vol. 1, London, Whittaker, Treacher and Co., 1833, p. 74.

<sup>9</sup>Ibid., p. 135.

<sup>10</sup>F. R. Augier, and S. C. Gordon, Sources of West Indian History, London, Longmans, 1962, p. 171.







feast days, and recognized holidays. During cropping time for sugar cane the Saturday half-day was not given.<sup>11</sup> The more ambitious slave would also be able to attend to his provision grounds during the one-and-a half hour to two hour lunch break at mid-day on work days.

During the early nineteenth century, Mrs. Carmichael, a five year resident of the West Indies, wrote on the production of food crops on the estates. In her book she mentions the crops grown. The variety of these is rather informative as the following were cultivated: English pea, cabbage, turnips, carrots, lima beans, French beans, black-eyed peas, pigeon peas, maize, cucumbers, pumpkins, melons, calialou, christophine, sweet cassava, eddoes, yams (Portuguese, Guinea, water, white, cush-cush), grapes, peppers, mint, sage, and thyme. Tree crops included, bananas, plantains, breadfruit, mango, papaw, alligator (avocado) pear, guavas and various types of plum.<sup>12</sup>

This wide selection of produce is not likely to have been grown on any one slave's plot, but a good cross-section would have been evident on the land of the more enterprising negroes. Carmichael adds that:

There is not one slave upon an estate who cannot raise an abundance of these fruits, roots, and vegetables - far more than he can use for his own consumption. The great majority of

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<sup>11</sup>Carmichael, op. cit., p. 174.

<sup>12</sup>Ibid., pp. 137-173.



these negroes have their grounds fully stocked; some, however, are lazy and will not work their grounds to the extent they might do; . . . There is not an instance of a negro who works well for his owner who has not his provision-grounds in the greatest order, and full of all sorts of supplies, both for himself and the market.<sup>13</sup>

In addition to their crops, the slaves kept chickens, ducks, pigs, and goats. Usually these would be found roaming around the kitchen plot. Their quality was poor, but helped to supplement the diet on festive occasions.

With the Act of Emancipation in 1838 peasant agriculture had its real birth in the West Indies, Grenada was no exception. Before this time the peasantry principally consisted of the free coloured population who worked their small gardens. From the ranks of the emancipated negroes evolved the peasant farmer who was to form the cadre for domestic food-crop production.

In this paper the term 'peasant' is applied to those people with,

. . . individual ownership of land, or individual rights over the productive unit, family and kin, co-operative labor and the use of a simple technology to raise cash crops in addition to subsistence crops.<sup>14</sup>

The land which he cultivates in food crops, whether they be yams, bananas, or lettuce, will be referred to as "provision

<sup>13</sup>Ibid., p. 173.

<sup>14</sup>E. Padilla, "Contemporary Social-rural Types in the Caribbean," in V. Rubin ed., Caribbean Symposium Studies, Seattle, University of Washington, 1960, p. 25.





grounds". This is not to be confused with "ground provisions" which are food crops grown in the ground, eg. tannias, sweet potatoes.

Emancipation gave the negroes civil status and with it the opportunity for a self-respecting existence, beyond the control of their former master. At the same time, it left them "poor, illiterate, landless, and without political rights."<sup>15</sup> Nevertheless, the majority were only too pleased to manifest this freedom and be useful members of their society instead of being its mute subordinates. This they did by developing a peasantry - the growth of which received no encouragement from the British Government whose policy was,

. . . to make it difficult for labourers to acquire small holdings in order that they would be compelled to work regularly for wages and thereby assist to maintain the staple industry, sugar.<sup>16</sup>

There was such an independence of spirit and an abhorrence of regular labour for fixed wages on the sugar estates (in many instances there was the desire to sever all connections with the past), that despite the attitude of the government, there was a shortage of labour on the estates. The freed negroes on Grenada had several means by which they might acquire land to work.

<sup>15</sup>M. G. Smith, Stratification in Grenada, Los Angeles, University of California Press, 1965, p. 11.

<sup>16</sup>C. Y. Shephard, "Peasant Agriculture in the Leeward and Windward Islands", Tropical Agriculture, Vol. XXIV, Nos. 4-6, 1947, p. 62.





The quantity of uncultivated land in the interior of the island, and the ease with which it could be bought, rented, or . . . squatted upon, caused the establishment almost immediately of numerous 'gardens' therein . . . . The provisions which sprang without any great trouble on his (the negro's) part found a ready market.<sup>17</sup>

Although it might appear that emancipation created a rapid transition from slave to small land holder, this was not the case. There was a steady development of peasantry from 1838 onwards, although the 1846 sugar Equalisation Act gave considerable impetus to its advancement. This Act was the death blow to sugar cane on the island as it eliminated the protected market in the United Kingdom for British West Indian sugar and left the producer to compete with other foreign slave-produced sugar. Two significant results of this were; i) the abandonment of many sugar estates; in fact forty-seven estates were in this state by 1856,<sup>18</sup> i.e. about half the sugar estates on the island; ii) the conversion of sugar estates to cocoa producers. The first change meant that abandoned estate land was available for renting and share cropping by the negroes. The change to a tree crop had begun prior to emancipation, but with the labour shortage following the freeing of the slaves and the loss of the protected sugar market in the United Kingdom this transition became all the more rapid. With the change-over from sugar to cocoa the labourer was offered his first

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<sup>17</sup>Grenada Handbook, op. cit., p. 41.

<sup>18</sup>Ibid., p. 45.



opportunity to become a land holder through the metayer system.<sup>19</sup>

Thus the peasantry worked land upon which they squatted, share-cropped, rented or owned outright. Initially food-crop production would have been their prime concern mainly on a subsistence basis. This accomplished, the more ambitious negro would start to cultivate cash crops, principally those for export. This remains the trend of development to-day.

It was the Crown Land in the centre of Grenada that was inviting to negroes who lacked both capital and initiative to acquire land to purchase, rent or share-crop. Those who settled on this Crown Land were called squatters. Much of the terrain was unsuitable for cultivation, being mountainous and forested. The abundance of this land permitted slash and burn methods and a shifting cultivation. (It is probable that the Arawak techniques of cultivating were more advanced.) Erosion became rampant in this area of heavy rainfall, with the squatter becoming an agricultural, as well as a social problem. The squatter was, and is, almost solely a subsistence agriculturalist, isolated from the rest of society. Consequently, the food crops he grows rarely enter the market.

Share-cropping was probably not as common on Grenada as it was on the other islands, because of the incentive created by the metayer system to acquire one's own land. What share-cropping entails has been alluded to earlier. It was an expedient to which planters resorted as a means of maintaining

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<sup>19</sup>Loc. cit.







ownership, and at the same time obtaining some return from marginal land. The landlord usually stipulated what crop he wanted payment in, e.g. sugar cane, so some supervision was necessary. As a basis for peasant farming it is poor, with the landowner regarding his role of landlord as a temporary one, and the tenant, lacking security of tenure, farming in an irresponsible manner.<sup>20</sup> As a means of permitting a labourer to cultivate more land than he might normally have right to, and hence increase his income, it was a system with some merit immediately following emancipation.

Renting land, or cash tenancy was a much more satisfactory arrangement for the peasant. The landlord rented his lands as a minor source of revenue. The land which he rented out was either,

- (i) the outlying portions of some estates, other parts of which are cultivated by planters and/or share croppers, and (ii) entire estates.<sup>21</sup>

In case (i) inaccessibility was a common problem, but in such cases the rental might be minimal being a token of gratitude to a worthy share-cropper or labourer. Where whole estates were rented out the land was frequently unsuitable for a profitable plantation operation, nevertheless, they could be exploited economically by the peasant.

The most satisfactory arrangement for the peasant was

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<sup>20</sup>Shephard, op. cit., p. 65.

<sup>21</sup>Ibid., p. 67.



for him to own his land. This was beyond the financial means of most labourers following emancipation and it was not until the planters adopted the metayer, or contract system for putting their land into cocoa, that the negro had the opportunity for the acquisition of capital and land. This system was adopted by the planters who were in no financial position to employ labour to convert their estates into cocoa bearing lands. The transition involved a contractor, usually a labourer, who was responsible to bring one to three acres of estate land into cocoa production. In the process of doing this the contractor might profit from any produce he might cultivate on this land. At the end of an agreed period, usually five years, the estate owner claimed the contract, and paid the contractor in proportion to the number of cocoa trees planted. With this sum the contractor could purchase land on "bankrupt sugar estates, or on the upper portions of those estates which were being converted from sugar to cacao."<sup>22</sup> Such land was available in substantial amounts in Grenada during and after the 1870's.<sup>23</sup> The metayer system was not a ubiquitous feature of agriculture in the West Indies at this time. So by the end of the nineteenth century Grenada had the greatest percentage of peasant proprietors of any Caribbean island. The census of 1891 illustrates this point. Out of a total of 3,024 agricultural holdings, 2,508 or 83% were less than five acres<sup>24</sup> in

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<sup>22</sup>Shephard, op. cit., p. 69.

<sup>23</sup>Loc. cit.

<sup>24</sup>Grenada Handbook, op. cit., p. 58.





size, and could be considered peasant holdings.

In addition to the bulk of the land the peasant cultivated, be it rented, share-cropped or freehold, was the small "kitchen garden" adjacent to his dwelling place. This was a direct carry over from the plantation days with this one-quarter to one-half acre serving the same function. These gardens usually supplied the family needs, while the provision grounds catered to the markets.

Usually the provision grounds would constitute only a part of the land worked by the peasant. In many cases over half the land would be in tree crops - initially cocoa, and after 1843 the nutmeg tree, which was introduced from the Dutch East Indies.<sup>25</sup> (In the twentieth century with the advent of refrigerated ships and a prosperous market, bananas completed the present trio of tree crop products for export.) On this, Williams noted that following emancipation the "peasant proprietors soon demonstrated that the cultivation of the so-called plantation crops was not beyond him."<sup>26</sup> The ease of cultivating cocoa has been said to be better suited to the "indolent disposition" of the negro than cane or coffee.<sup>27</sup> If this is the case, then this could account for its being a popular cash crop with the peasant proprietors.

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<sup>25</sup>Key, op. cit., p. 21.

<sup>26</sup>E. Williams, The Negro in the Caribbean, The Associate in Negro Folk Education, Washington, D.C., 1942, p. 48.

<sup>27</sup>Grenada Handbook, op. cit., p. 42.





The provision grounds were cultivated in much the same manner as they had been under slavery. The primitive methods of cultivating with hoe and cutlass remained. There was an abundance of kitchen gardens, not all belonged to peasant proprietors, some were kept by construction labourers, fishermen, and shop keepers. Hence the local market at this time was serving mainly the middle classes which were being established in urban centres such as St. George's and Grenville. In fact the island did afford the export of provisions to Trinidad and Barbados. Consequently, without the motivation to accumulate wealth for its own sake, there was little incentive to increase production or improve methods of husbandry.

A visitor to the West Indies during the latter half of the twentieth century was the author Charles Kingsley. He made some observations of peasant provision grounds for the West Indies as a whole. These illustrate his impressions of the state of cultivation.

. . . a glance shows that the limit of production has not been nearly reached. Were the fork used instead of the hoe; were the weeds kept down; were the manure returned to the soil, instead of festering about everywhere in the sun and rain; . . . were even as much done for the land as an English labourer does for his garden; . . . if as much as were done for it as for a suburban market garden, the produce might be doubled or trebled, and that without exhausting the soil.<sup>28</sup>

Since this time the same complaints have been reiter-

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<sup>28</sup>C. Kingsley, At Last a Christmas in the West Indies, London, MacMillan and Co. Ltd., 1913, p. 315.



ated. In fact the development of peasant farming has made little significant progress with respect to food-crop production. The same methods, the same crop association, the same tools, and the same superstitions exist today. Amongst the farmers there is a traditional conservatism which makes them reluctant to, and suspicious of change.

In the overall picture of peasant agriculture, there has perhaps been some retrogression through the fragmentation of land holding. This has become a common feature. As the farmer wishes to expand his holdings, (this is considered a means of investment as well as a symbol of prestige) the likelihood of obtaining property contiguous to his own is remote. Hence he purchases the nearest most suitable piece of land which may be several miles from his initial lot. Transport to and from these scattered holdings is time consuming and encourages casual farming practices.

In the post World War II period there has been increased difficulty for the farmers to persuade their sons to work on the land. The education system has geared them for clerical jobs with the result that manual labour has been frowned upon. This has resulted in the peasant proprietor and his labourers being in the lowest social group on the island. In most cases the farmer all too readily appreciates his son's position, not wishing on him the long hours and hardships he himself has had to endure. Consequently there is a trend away from the land, with peasants selling their property, or converting provision







grounds into tree cash crops which demand less labour.

With the establishment of the Extension Service within the Department of Agriculture in the 1940's there has been considerable attention directed to the assistance of the peasant farmers in the adoption of more scientific farming methods. The emphasis of this service has been specifically on improving production of bananas, cocoa and nutmegs. Food crops have been generally overlooked, and it is only repercussions of lessons learned from the advice given by agricultural instructors in regard to tree crops that food crop farming has benefited to any extent. These have been mainly concerned with soil conservation rather than introducing new methods of husbandry. To-day, the Department of Agriculture is becoming increasingly aware of the neglect domestic food crop production has suffered in the past. The measures being taken to rectify this omission will be mentioned in a later chapter.

In summary, the methods of cultivation of food crops are essentially the same to-day as they were on the slave provision plots. Although the variety of crops has increased, the volume of production per capita of population has decreased to the point where foodstuffs have become the most important single import by value.

The geponic practices associated with food-crop production are outdated and inefficient. Kingsley noted this fact in the 1860's, and since then this inefficiency has only become more apparent in the light of present day technology -



a light which is notably absent in the provision grounds of Grenada. There is need for drastic changes to be made if food-crop production on the island is to meet the challenge of a growing population and a more balanced economy.





## CHAPTER FOUR

### MAJOR FOOD CROPS AND THEIR USES

The Grenadian peasant farmer cultivates a host of food crops of both tropical and temperate origins. The crops any one farmer cultivates reflect his own personal attitudes and tastes, the tradition established by his forefathers, and the conditions and site of his garden plots. In most instances the variety of his crops numbers between fifteen and twenty different plants. Many will be solely for domestic use and will be found in kitchen gardens. The produce destined for market will be grown in the scattered provision grounds of the peasant. On his provision ground vegetables will be found growing in and on the ground, while vines and fruit trees will utilize the space above the ground. These plots appear disorganized and confused, but this only illustrates a lack of appreciation for the agricultural practices on the part of the observer.

The types of vegetables grown can be categorized into the following groups:

- 1) Roots or tubers, e.g. tannias, yams, carrots.
- 2) Green leaves and flowers, e.g. cabbage, celery, cauliflower.



3) Fruit and pods e.g. peas and beans, tomatoes.<sup>1</sup>

It is under these headings that the major crops will be described and some of their cultivation requirements outlined.

## Vegetables

### I Roots and Tubers

#### a) Tropical

i) Cassava, Manihot utilissima, also called Tapioca, Manioc, and Yuca. It is a plant native to the West Indies and Central America, and is a perennial which is noted for being drought resistant. It thrives best in light alluvial soils or well tilled red earths. The most favorable sites for cultivation are on slopes which are well drained and exposed to maximum sunlight. A suitable time for planting is at the beginning of the rainy season, i.e. in June, after the first showers have moistened the soil. It can be as many as eighteen months before harvesting can take place, although this time will vary according to location and the variety of cassava.

There are two distinct kinds, the "Bitter" and the "Sweet". With both it is the tuberous root which is the source of starchy food. When ground cassava is often used in place of corn and wheaten flour.

ii) Yams, Dioscorea spp. The yam came originally from Asia. These plants have edible tubers which resemble potatoes. They flourish in light, deep and well-drained soils. The most

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<sup>1</sup>Jamaica Agricultural Society, The Farmer's Guide, Glasgow, The University Press, 1962, p. 556.





suitable months for planting are between April and June. To promote the best growth the vine will require a stick or wire trellis about which to climb. The crop can be reaped nine to twelve months after planting. Propagation is usually achieved by planting an entire tuber from which further tubers will develop.

Of the numerous species, the most popular are the Greater Asiatic or water yam, D. alata, with its varieties the Lisbon and Devil, the white gruria yam, D. rotundata, the white guinea yam, D. cayennensis, and the cush cush, D. trifida.<sup>2</sup>

As the ripe yam rots quickly around bruised spots, care must be taken during reaping and subsequent handling. Generally yams do not keep well, (the white yam being a noted exception) and hence should be used soon after reaping. The white yam can be kept for months if 'cured', i.e. have lime rubbed into all the cut surfaces and then exposed to the sun for a day or so.<sup>3</sup>

iii) Tannia, Xanthosoma sagittifolium, also called Tannier, and Yautia. This is an herbaceous tuberous perennial found throughout the humid tropics. It does best in "moist, well-manured soil, preferring low-lying ground or shady glades in the mountains."<sup>4</sup> Alluvial soils are ideal, but clay soils will prove adequate if good drainage is present. Planting

<sup>2</sup>R. C. Wood, A Note-book of Tropical Agriculture, Imperial College of Tropical Agriculture, Trinidad, 1957, p. 153.

<sup>3</sup>Jamaica Agricultural Society, op. cit., p. 546.

<sup>4</sup>J. Barrau, Subsistence Agriculture in Melanesia, Bernice P. Bishop Museum Bulletin 219, Honolulu, 1958, p. 44.



should be undertaken just prior to the rainy season, in May and June, with harvesting taking place six to eight months later. From the root-stalk or head of the plant, pieces containing an 'eye' or bud knot of suitable size (about  $\frac{1}{2}$  lb. in weight) are obtained, and are planted for propagation. These plants are noted for their good preservation qualities when stored in a dry atmosphere and in a dark place.

iv) Eddo, Colocasia antiquorum, also called Taro and Dasheen. In Grenada the term "Eddo" refers to a small type of tannia, while the dasheen is considered to be a larger version of the same plant. Both the tannia and eddo belong to same family, Araceae, although the genus of the tannia is considered to differ. The same climate and soil conditions that suit the tannia are favorable to the eddo, i.e. the wetter and shady parts of the island. For this reason they are often interplanted under tree crops.

v) Sweet Potato, Ipomoea batata. This is a trailing perennial native of the American tropics the tuberous roots of which are the food crop. Soils of a light texture at a cool elevation with good rainfall are most suitable for high yields. Good drainage is necessary in areas of heavy soil and rainfall. It is reasonably drought resistant.

The sweet potato is a popular crop as it is easily cultivated, and can be harvested in four to five months. So as to benefit from the wet season planting occurs in May and June, and again in October to mid-November.





Propagation can be achieved in two ways. The most popular method is to grow sections of the vine. The other is to plant the whole potato from which will emerge shoots, which when severed from the tubers can be planted.<sup>5</sup> Sweet potatoes can be preserved provided the crop is mature, and air-dried in shade before storing. Storage must exclude air, light and moisture.

vi) Arrowroot, Maranta arundinacea. This is a rhizome from which is produced a high quality starch, which being easily digested is served as a food for infants. It is not widely grown in Grenada.

b) Temperate

i) Beet, Beta vulgaris. The red beet is a root crop which prefers a fairly neutral soil as it is very sensitive to acid conditions. Hence, there is a need for lime on many of the soils. Like many temperate vegetables it thrives well in forked, fertile soil, and grows best in cooler regions where temperatures are below 75°F and rainfall is heavy. Temperate crops are usually propagated from seed, and at some stage this necessitates the transplanting of seedling from seed beds to the garden plot. Beets in Grenada can be harvested two to three months after planting.

ii) Carrot, Daucus carota. This umbelliferous plant, with its tapering root, can grow in most soil types including

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<sup>5</sup>Jamaica Agricultural Society, op. cit., p. 538.



those too poor for other vegetables.<sup>6</sup> On well-drained sandy, silty and loamy soils, carrots can grow all year round. The roots can be reaped two and a half months after planting.

iii) Onion, Allium cepa. This bulbous plant is one of the oldest used vegetables and is native to Western Asia. Onions grow in soil which is fertile and well-drained. With harvesting being preferable during the dry season, planting should occur in October and November.

iv) Radish, Raphanus sativus. It is a plant whose place of origin is thought to have been China.<sup>7</sup> This small root plant is easily grown in soils which are not too heavy or wet. As it can tolerate high temperature it can be widely grown. As the time from planting to reaping is only three to four weeks, radishes can "be used as a quick rotation between two such crops as lettuce reaped in June or December, and corn planted in August and February."<sup>8</sup>

v) Turnip, Brassica rapa. This is a spheroidal root of a cruciferous plant which is related to the radish, cabbage, cauliflower and broccoli. For this reason no one of this species should succeed another in the same bed, as there is a likelihood of disease and pests being present in the soil.<sup>9</sup>

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<sup>6</sup>Ibid., p. 559.

<sup>7</sup>Ibid., p. 562.

<sup>8</sup>Loc. cit.

<sup>9</sup>Crops of any one species are vulnerable to the same diseases and pests.





It requires a good, deep, fertile soil in areas which do not experience dry weather. Consequently, it does best in the well-drained soils of the cooler, moister regions of the island.

## II Green Leaves and Flowers

i) Cabbage, Brassica oleracea. This plant is one whose origin can be traced back to the earliest days when it grew wild on the lime soils of the lands bordering the English Channel. It can grow in a range of moderately fertile soils, but it prefers deep, fertile loam with a high lime content. Cooler regions are favorable. Dependent upon the variety used, the time of harvesting will be three and a half to five months after planting.

ii) Lettuce, Lactuca sativa. This leafy plant can be cultivated in a variety of soils provided both moisture and nitrogen are available. This can be added in the form of mulch, manure, and nitrate fertilizer. It is a crop which should be transplanted twice - a time consuming task for many peasant farmers. Provided there is moisture available, heat can be tolerated. As it takes from one and a half to two and a half months to mature, it is planted throughout the wet season and cultivated under simple domestic irrigation.

iii) Celery, Apium graveolens. This is one of the more difficult crops for the peasant to cultivate successfully. The preparation of the seed beds demands more care and attention than most farmers can give. The need for lime and artificial



fertilizers, together with the long growth period of four months make it an uncommon crop on provision plots. In addition, there is little local demand for this vegetable, though tourism might create a mild seasonal increase.

### III Fruit and Pods

i) Cow Pea, Vigna sinensis. This is a cover crop, i.e. one which covers the ground, reducing erosion and restricting weed growth, and one which adds much nitrogen and organic matter to the soil. Besides being a foodcrop it also serves as a source of green manure and forage. It can be grown in a variety of soils and withstand some drought conditions. Cool shaded sites should be avoided. This crop is best planted six to eight weeks before the wet season is expected to end, i.e. in mid-November, and can be harvested two to three months later. The pods can be picked either green or dry.

ii) Cucumber, Cucumis sativus. This creeping plant with its elongated fruit is one of the world's oldest known vegetables. Its origin is thought to have been in the East Indies.<sup>10</sup> The cucumber requires a friable, non-acid soil with good drainage. As it is a heavy feeder, manure, compost or artificial fertilizer should be available in the soil. Ample moisture is necessary for this crop so planting takes place during the wet season. As it can tolerate high temperatures it can be grown in most parts of the island. Reaping is possible six weeks after

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<sup>10</sup>Ibid., p. 569.





planting.<sup>11</sup>

iii) English Pea, Pisum sativum. This is another long known vegetable. It is not widely grown in Grenada, because of the unsuitability of climatic conditions, and competition from the more favored cow and pigeon peas. It requires a moderately fertile soil in a location where neither excessively wet weather nor drought exist. Below 2,000 feet the temperatures are too high for successful cultivation, and generally above that elevation rainfall is too heavy. Consequently, conditions for growth in Grenada are restricted.

iv) French Bean, Phaseolus vulgaris, also called String, Kidney or Haricot bean. This is a plant whose origins are in the Americas. The most suitable soils for the French bean are those high in organic matter and not too heavy nor poorly drained. After planting, the beans take one and a half to two months before they can be reaped.

v) Groundnut, Arachis hypogaea, also referred to as Peanut, Earthnut, and Monkey nut. This leguminous crop favours drier conditions. It does well on light alluvial and terra rosa soils, not thriving in moist areas or in heavy clay soils.

There are two main types, the procumbent (runner) and the bunch (erect).<sup>12</sup> The preferred variety in Grenada is the latter, as it is easier to cultivate. This variety takes three

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<sup>11</sup>Farmers' Diary 1967, Extra Mural Dept., University of the West Indies, Trinidad, 1966, n.p.

<sup>12</sup>Wood, op. cit., p. 155.



and a half to five months before it can be reaped. In Grenada the value of the groundnut has not been recognized by the peasant farmer, as it is rarely planted.

vi) Maize, Zea mays, is also called Indian corn, Mealies and Mahindi,<sup>13</sup> although in Grenada it is generally referred to simply as corn. It is native to the Americas. Maize, feeding heavily on soil nutrients, prefers a fertile soil such as a loamy soil rich in humus.<sup>14</sup> It prefers moist conditions, but has the property of being drought resistant in that when soil moisture is unavailable it enters a dormant state, and resumes growing when the water supply is again available.<sup>15</sup> This crop can be planted in May and June, and then later in October and November. Harvesting takes place when the plants begin to "dry out". This is usually three months after planting.

vii) Melongene, Solanum melogera. It is also called Garden Egg or Eggplant. Melongene is native to South America and is closely related to the tomato and sweet pepper. Consequently, as they are affected by the same diseases, they should not be planted too close to each other, or follow each other in the same plot of land. This crop prefers well-drained soils into which have been worked compost and manure. Nitrate and

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<sup>13</sup>Ibid., p. 144.

<sup>14</sup>B. F. Johnstone, The Staple Food Economies of Western Tropical Africa, Stanford, Stanford University Press, 1958, p. 100.

<sup>15</sup>Ibid., p. 99.





phosphate fertilizers may be applied to get maximum development. The fruit will appear two to three months after planting.

viii) Okra, Hibiscus esculentus, also called Achro and Gumbo. It is an annual plant which is four to six feet tall and has small horn-shaped pods of a mucilaginous nature. It grows well in a warm location on a variety of soils. Two months after planting the pods are ready for picking which must be done at a certain stage or they become fibrous. The plant continues to produce these pods throughout much of the year.

ix) Pepper, Capsicum spp. This is a small annual or perennial plant which can vary in pungency from very hot to sweet depending upon the variety. Its requirements are similar to the Melongene, but it has a longer growing season, taking three to four months before it can be harvested.

x) Pigeon Pea, Cajanus cajan, also called Dhal, Gungo or Congo pea. This is a short lived perennial bushy scrub which grows six to eight feet high and is grown from seed. As a leguminous plant it is a useful soil renovator especially on account of its long deep tap root,<sup>16</sup> which also makes it drought resistant. It is widely grown partly on account of the ease with which it is cultivated, and partly because of its ability to thrive under variable soil conditions and in areas which experience drought. The suitable months for planting are from May to July. Harvesting can occur in three months, although six to seven months is more usual. This difference in time

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<sup>16</sup>Wood, op. cit., p. 149.



depends upon the variety of pea and on whether the pods are picked green or dry. As a perennial it may give two crops a year, the main crop being in December and January. When the seeds are dried and kept dry they can be preserved for lengthy periods.

xi) Pumpkin, Cucurbita maxima. This is a plant similar to the cucumber and squash, but one whose fruit is larger and often spheroidal. It is native to North America. The most suitable soils are light sandy loam and loam in which there is some organic matter. Planting can take place between May and January with harvesting being three to four months later. An ample water supply is necessary, but temperature considerations are not significant. Once picked it must be quickly used, as it does not keep well.

xii) Tomato, Lycopersicon esculentum. This is a native plant of tropical America. It can be grown with moderate success quite easily, but to obtain maximum production it demands more care and attention than most peasant farmers are prepared to give. To thrive it requires a well-drained fertile soil and applications of phosphate and nitrate fertilizers during the early growing season. Depending upon the variety of tomatoes planted, stakes may be required to support the plant. The best time to plant is during the dry season from December to May. The fruit will be ready for picking two to three months later. Frequently, tomatoes will be picked before they are properly ripe, i.e. when still greenish, in this way their





keeping properties are lengthened, otherwise consumption must be almost immediate.

### Fruit Trees

This source of food crop production is important, although in most cases it is an unorganized sector of most peasant agriculture. In the kitchen garden adjacent to the family dwelling place, and scattered haphazardly in and about the provision grounds, are a host of fruit trees which form a substantial part of the local diet.

Orchards for non-export crops are virtually unknown on peasant lands. The majority of trees require little attention and would appear to grow more by accidental disposition of the seed after previous consumption of the fruit, than through any careful cultivation. This is especially the case in the provision grounds, where a fruit tree may be found in the middle of a plot. In other cases a large breadfruit tree may be overshadowing a small citrus tree, thus inhibiting full growth. In the kitchen gardens some resemblance of order is found with the selection of tree types, if not with arrangement of the trees. In most gardens at least one banana, plantain, mango and coconut tree can be found. These are an omnipresent "door-step" source of food.

### Fruit Trees of Major Importance

1) Avocado Pear, Persea americana, also called alligator pear. This evergreen tree is indigenous to tropical America. It can thrive on a variety of soils provided they



are free-draining. The fruiting season extends from July to November. As this fruit does not keep once ripe, it is picked when unripe and left to soften.

ii) Banana, Musa spp. There are many varieties of bananas, (no less than 400 varieties have been classified in India).<sup>17</sup> The name "banana" includes both the starchy varieties, such as plantain and bluggoe, and the sweet varieties such as the Gros Michel and Lacatan which are the most commonly exported bananas from the West Indies. The banana plant is a giant herb with expansive leaves which develop a small amount of woody fibre. Depending upon the variety, it can vary from five to twenty feet in height. By means of rhizomes it multiplies at a prolific rate. From each stem is produced a single bunch of bananas, each of which is comprised of six to twelve hands of about a dozen individual fruits. The first bunch matures fourteen months after planting. At this time another shoot will have appeared at the base of the initial plant. This in turn will produce its own bunch of bananas.

Bananas are exacting in their soil and moisture requirements. Although they can grow on a variety of soils, they prefer deep sandy loam. Besides this, climate is also a limiting factor. The plant requires at least 80 inches of well distributed rainfall for maximum development, together with high temperatures and high humidity.<sup>18</sup> As this crop is a heavy feeder

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<sup>17</sup>Jamaica Agricultural Society, op. cit., p. 331.

<sup>18</sup>Johnston, op. cit., p. 106.





on soil nutrients, fertilizing is necessary for satisfactory cultivation. Bananas are important in the local diet and can be considered one of the staple foods.

iii) Breadfruit and Breadnut, Artocarpus communis.

This fruit is native to the Pacific Islands and was introduced to the West Indies in 1793 by Captain Bligh. It is a tall tree reaching 60 feet in height. The fruit is spheroidal or ovoid in shape. The breadfruit tree produces two crops annually one between June and December, the other in February and March. The breadnut with its more spiny rind cover produces fruit the year round. This starchy fruit is another popular food of many a Grenadian.

iv) Citrus, Citrus spp. The principal types grown are the Valencia or sweet orange, C. sinensia, grapefruit, C. paradisi, lemon, C. limonia, lime, C. aurantiifolia, citron, C. medica, mandarin, C. nobilis, and Seville or sour orange, C. aurantium. Of these types the lime is the most ubiquitous in Grenada followed by the orange and the grapefruit.<sup>19</sup>

For citrus the best soils are light medium to medium loams, which possess free surface and internal drainage to at least four feet.<sup>20</sup> Annual rainfall should be in excess of 60 inches with no month having less than one inch.<sup>21</sup> The trees

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<sup>19</sup> British Development Division, Current Estimates of Agriculture, April-March, 1964-65, Grenada, Bridgetown, 1966, pp. 12-13.

<sup>20</sup> Jamaica Agricultural Society, op. cit., p. 385.

<sup>21</sup> Ibid., p. 383.



will usually blossom with the first rains following the dry season. Seven to nine months later the fruit will be ready for picking.

v) Coconuts, Cocos nucifera. Although the nuts from this tree will be grown principally for copra on plantation or estate scale, most peasants will have some of these trees in their kitchen garden. The half ripe nuts provide a source of refreshment. There are tall and dwarf types, with the latter bearing about two years sooner than the former, i.e. in four to five years. Coconuts prefer deep alluvial or loamy soils in which there is free drainage. They also do well in coastal sandy soils.

vi) Mango, Mangifera indica. This quick growing ever-green tree is native to the Asian tropics. It has a round, oblong or ovoid fruit depending upon the variety. It prefers low elevations which are warm and not too moist. The fruit is picked from May to July usually before it has fully ripened so it can be kept longer.

Other fruit trees found less commonly in gardens on the island are;

Cashew, Anacardium occidentale  
 Custard Apple, Annona veticulata  
 Genip, Melicoeca bijuga  
 Golden Apple, Spondias cytherea  
 Guava, Psidium guajava  
 Hog plum, Spondias monbin  
 Mamey Apple, Mammea americana  
 Papaya, Carica papaya  
 Passion fruit, Passiflora edulis  
 Pineapple, Ananas comosus  
 Soursop, Annona muricata  
 Star Apple, Chrysophyllum cainito  
 Sugar Apple, Annona squamosa





The presence of these trees on any peasant land may be the consequence of personal preference, tradition, or unplanned natural propagation.

### Herbs and Spices

Although herbs and spices might not be considered as single dish food crops, they are cultivated in conjunction with vegetables, and are used to season many of the local dishes. With Grenada having the epithet "The Spice Island of the West", it would be an inappropriate omission not to mention these crops.

i) Allspice, Pimenta officinalis. It is also called Pimento. This small tree is indigenous to Central America and the Caribbean. The berries of this plant are picked before they ripen, and are then dried.

ii) Bay, Pimenta acris. Leaves of this evergreen tree when dried are used as seasoning, as well as for medication.

iii) Black pepper, Piper nigrum. This is a creeping perennial vine which is suited to low wet areas. It prefers shade and climbs up artificial or natural supports. In two to three years after planting it yields berries which when dried become peppercorns.

iv) Chives, Allium schoenoprasum. This is an onion like plant whose thickened stems grow in clumps. It is harvested throughout the year, and is a popular seasoning for fish and meat.

v) Cinnamon, Cinamomum zeylanicum. As a tree it



reaches a height of 40 to 60 feet, but it is cultivated as a bush. When the shoots are six to eight feet tall, after two to three years of growth, they are cut close to the ground so as to obtain the bark which provides the spice.

vi) Clove, Eugenia aromatica. This is a small tree whose unexpanded flower buds are picked green and dried. In addition to its use as a spice, it has medicinal value.

vii) Ginger, Zingiber officinale. Ginger is obtained from the tuberous root or rhizome of this herbaceous perennial. It thrives in shaded locations in well-drained loam soils. Besides being used as a spice, the root is used in the making of beverages, and as a medicinal remedy.

viii) Nutmeg, Myristica fragans. The large seed of the fruit of this tree is the nutmeg. Around the seed is a partial covering of red aries called mace. When the tree is eight to nine years it starts to bear fruit, and will continue to do so until it is about 30 years of age. During the year two crops are produced, this enables picking to be almost continuous. It is one of the main cash crops of Grenada, and became increasingly important during and after World War II.

ix) Thyme, Thymus vulgaris, is a small three inch shrubby perennial whose small leaves are dried to form herbs. It is frequently grown in association with chives and used widely to season fish and meat.

x) Tumeric, Curcuma longa. It is also called saffron. This is a perennial scrub whose root is similar to ginger or





arrowroot except that it has a bright orange-yellow colour. Tumeric is used to colour as well as flavour rice dishes, and is used in the making of condiments with pepper and mustard.

### Miscellaneous

Cocoa, Theobroma cacao. This is principally an export crop, used in the making of chocolate, but it is used locally as a food. This tree requires a shade temperature of about 80°F with an evenly distributed rainfall of 60 to 80 inches per year. From the ovoid-shaped fruit come the beans, which are dried before processing. The cocoa beans can be cooked and served as a vegetable, in addition to their use in making a beverage.

### Diseases and Pests

Little evidence of disease was seen in the food crop areas. Fungal and bacterial wilts were amongst the most frequent complaints.

Pests are a more serious problem. Rodents such as mice and rats damage both fruit and vegetables. Insects and their associated worms and grubs do extensive damage to crops. Examples of these are aphids, beetles, caterpillars, crickets, cutworms, fruit worms, hornworms, and weevils. In sandy coastal locations land crabs do considerable damage to the roots of plants as they burrow.

Control of disease is by dusting and spraying, that of pests by baiting and trapping. The agricultural instructor or the plant protection officer usually advises the appropriate measures. Unfortunately, such services are not called upon as



frequently as they are actually required.

### Use of Crops in the Local Diet

The previously mentioned crops are used in a multitude of ways in the diet of the people. The methods of preparation are so varied that it is scarcely possible to discern which vegetables have been employed. This variety reflects African, European and East Indian eating habits and tastes.

The diet is heavily starchy in nature with rice frequently being a significant main dish. To the rice will be added pigeon or cow peas, and boiled or steamed pieces of some of the following: bluggo, breadfruit, dasheen, plantain, sweet potato, yam, carrot and turnip. Dried fish or meat with a host of spices, commonly chives and thyme, are often added to this mixture. A dish of this sort commonly constitutes the mid-day meal and dinner. Additional vegetables can consist of pureed cocoa beans, fried egg-plant, boiled corn or cucumber. Gravies are often served, well spiced with thyme, peppers, okra, and other seasonings at hand.

A dish which had its origins with the Caribs is the Pepper Pot. In those days it consisted of a pot which was constantly boiling and into which animal, vegetable and hot pepper remnants were continually being added. Today, it is made from any kind of meat to which is added fish and pickled pork together with onions, peppers, and seasoning, all boiled with cassareep.<sup>22</sup>

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<sup>22</sup>Key, op. cit., p. 88.





Soups are a popular dish. One of the best known is made from calialou. This is the heart-shaped leaf of the dash-  
een which is boiled together with the flower of the plant. Other soups are made from breadfruit, breadnut, pumpkin and tannia. All are customarily well seasoned.

Vegetable salads are made in a variety of ways. Popular ingredients include avocado pear, cooked breadfruit, cucumber, lettuce, radish and tomato.

Desserts often consist of local fruits eaten in their raw state, with the exception of guavas which are usually stewed. Other uses of fruit include the making of cheese and jelly from guava and the fruit of the nutmeg, the making of custard and chutney from the mango, and the flavouring of ice-cream from the juice of the soursop. There are endless possibilities of what can be done with the island's fruit. Unfortunately these are not being realized by peasant women who generally lack training in making marmalade, jam, jelly, and in preserving fruit and vegetables.

Bread is made not only from corn flour or imported wheat flour, but also from cassava flour. This is the most important use of this tuber. Grated coconut is also used as an ingredient in the making of bread.

These are a few specific examples of how some of the food crops are utilized in the everyday eating habits of the native population. They indicate the logic in having a kitchen garden in close proximity to the house from which many of the



quickly perishable produce can be gathered. The examples also show that independent of the season, the main bulk of the diet can be ensured, i.e. the base of imported rice, plus the year round supply of most ground provisions made possible according to the degree of their storage properties.





## CHAPTER FIVE

### CHARACTERISTICS AND PRACTICES IN FOOD CROP PRODUCTION

#### General Characteristics

For the majority of peasant farmers food-crop production is of secondary importance - export crops are their prime consideration. From field studies carried out by the writer in the summer of 1967, less than two acres of land on average was in food crops, out of an average size holding of five acres. The two acres would include the kitchen garden and the produce necessary to sustain the family and dependents. Any produce which goes to market usually represents the surplus available after home consumption. About one acre of land was normally planted in food crops specifically for the market.

The following are characteristics of practices by farmers of the provision grounds, and they indicate some of the chorological variations that exist upon the island today.

#### Farm Size

The peasant holdings that were visited varied in size from three-quarters of an acre to twelve acres. Those units which were less than three acres in size usually concentrated on food crops as the basis for livelihood, while the larger units concentrated on export crops for the majority of their cash returns.

Farm size showed a tendency to vary with respect to the district in which the farms were situated. In the Crochu-



Munich district peasant farms of between seven and twelve acres were not uncommon.<sup>1</sup> In this isolated region land was comparatively cheap, especially in the mountains. There is a local belief that land is a good investment, hence many peasants buy the nearest available land. In other areas notably Woburn in the south where land is prohibitively expensive for most peasant farmers, livestock were considered a means of investment. Hence this district is characterized by smaller farms of four to five acres, with a larger number of cattle, sheep, pigs and goats than where land was cheaper. In the main food producing districts, such as Mt. Moritz, Vendome, and Willis farm units were generally smaller, three to four acres, with livestock often being good quality dairy cattle. Such variations in size reflect local land values and land use, as well as attitudes towards farming. Many of the smallest units are merely extensions of the kitchen gardens. Such were found in close proximity to the main population centres especially St. George's and Grenville. Many of these holdings are worked part time, the owner having a permanent job in the town. Such lands tend to supply mostly domestic needs.

#### Holdings and Tenure

Peasant tenure represents a serious problem to agricultural improvement and development. The problem is related to fragmentation, rental and share-cropping of holdings. It is

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<sup>1</sup>Figures on the basis of sample studies done in the area.





a common feature that a farmer who owns seven acres of land will have this land scattered in five distinct locations. This fragmentation of property means that much valuable time and energy are absorbed in travelling to and from these plots, which may be separated by several miles. The extreme cases of fragmentation occurred in the Crochu, Mt. Cassels and Munich district where the buying of land for speculation was a common practice. Here the peasant tended to buy land closest to his existing property at the price he could afford. To this end several farmers had bought plots in the mountains which were almost inaccessible and, theoretically, highly unsuitable for cultivation. (See Plate I of peasant farming in dried up stream bed.) Some of this property would be ignored for much of the year, being bought more for the prestige of land ownership, than for increasing agricultural production. This was the case with three of seven farms visited in this district. The major food-crop producing districts showed less fragmentation of property. The higher price of land accounts for smaller, more unified farms.

The purchase of additional land not adjacent to the initial property lot is not the sole cause of fragmentation. The principal cause stems from inheritance.

This is a very real process in many areas and has in the last two or three generations reduced the size of individual holdings in an area from an economic size for a family to almost absurdly small pieces of land.<sup>2</sup>

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<sup>2</sup>Vernon, Payne and Spector, op. cit., pp. 27-28.





Plate I. Dasheen planted in former stream channel.



Plate II. Typical peasant tools; cutlass, Dutch hoe, spade, fork, and basket.







This situation has either forced people to abandon the land as a means of livelihood, or to acquire more property, hence fragmented plots.

Rented land represents another type of holding, and constitutes another drawback to agricultural improvement. This practice appeared to be most common in the south-west part of the island where property owners were reluctant to sell their land in view of the impending tourist boom, and the consequent land speculation in the district. Where short term rental policies were common, there is a tendency for exploitation of the land, a lack of "long-term anti-erosion measures or the planting of any long-term crop even where such a crop is logical for land-use."<sup>3</sup>

Share-cropping is a form of tenure similar to rental and exists in several forms. When a relative or close friend is incapacitated, or has other opportunities by which to make a living, a member of the family may work the land for a share of the produce. Another type of share-cropping exists in the case of estate labourers. They may be permitted to share crop on an allotted part of the estate. In some cases the land initially requires clearing of a forest cover before any cultivation is possible. Once this is achieved and a few crops obtained from the soil, the estate owner can reclaim the land for planting his export crop, and requires the labourer to clear another patch of ground under the same agreement. On estates

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<sup>3</sup>Ibid., p. 27.



where this is not the case the labourer may cultivate his crop on a portion of the less agriculturally desirable land of the estate. A primitive form of shifting agriculture is practised here so as to get the maximum return from a minimum effort. This leads to wanton and unjustifiable agricultural practices which deplete and erode the soil. For this reason, the Department of Agriculture discourages share cropping and short-term renting. However, these systems of land tenure are all too slow to disappear because, as yet, no government legislation has been passed to restrict or prohibit them. Land tenure systems are undoubtedly placing unnecessary restrictions upon efficient land use and improvement on the island. Their existence is a major obstacle requiring urgent attention.

### Tools

Simplicity, adaptibility and portability are the chief characteristics of the peasant farmer's tools. They are suited to the rugged terrain in which the farmer cultivates his crops. Equipment usually consists of cutlass, hoe, spade, fork and basket. (Plate II).

The cutlass is the most versatile of his tools and one which the farmer is rarely without. It is a larger version of the machete, with a slightly curved blade about two feet long. This tool is used for general clearing, cutting grass, weeding, digging shallow holes for the planting of peas, beans and corn, trimming trees, chopping wood, making stakes, and opening water nuts. With this variety of uses it is not





surprising that it has been considered an almost constant appendage of the peasant farmer himself.<sup>4</sup>

There are two types of hoes in use. The more commonly seen is the large Dutch hoe. The other, a small weeding hoe, is found in the more specialized food producing areas such as Mt. Moritz. The Dutch hoe is used in preparing the seed beds for planting and for the working of the soil into contour furrows. Holes for the planting of ground provisions, especially when on slopes, are made with this tool. General cultivation, clearing and the cleaning of drainage ditches are also carried out with it. Together with the cutlass it is the most indispensable tool the farmer has. The small hoe is solely for weeding and breaking the soil crust.

The spade is employed to turn the soil, dig drainage ditches, make tannia holes in level land (where it is more easily used than the Dutch hoe), and for general tending of plants during growth. Its use, however, is much less widespread than is the Dutch hoe.

When there is need for deep turning of the soil, and for spreading of mulch and manure, the fork is sometimes used. As many of its uses can be performed by the spade or hoe, it is rarely seen in use and then in only the more progressive food crop areas.

The woven wicker basket replaces the need for a wheel-

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<sup>4</sup>M. Horowitz, Morne-Paysan, New York, Holt, Rinehart and Winston, 1967, p. 29.



barrow, and when carried on the head it becomes more portable in rugged terrain. It not only carries produce from the field, but serves to transport soil, mulch and manure.

There is up to now no mechanization with this type of farming operation, not even a hand plough is used. A donkey may serve to carry heavy loads in panier baskets or sacks, but is not often used for traction of any kind.

### Agricultural Practices

There is considerable variation in the agricultural practices employed by farmers in different parts of the island. Such variations reflect the individual and local traditional attitude to food crop cultivation, the degree of isolation of the community, and the respect in which the agricultural instructor from the Department of Agriculture is held. In fact, these variations are so manifold that the making of any generalizations for a given area is bound to contain exceptions, because of the presence of an occasional progressive farmer in an isolated backward district. Nevertheless, there were in given districts distinct characteristics related to the historical, physical and cultural factors existing in that environment.

### The Mt. Moritz Farming Area

The Mt. Moritz area north of St. George's is accepted by local agricultural instructors as being the most advanced food producing area on the island. Reference to the practices in this area, will establish a pattern with which other districts





might be compared and contrasted. In location and climate the Mt. Moritz district is similar to the other principal food-crop growing districts. Its development as an intensively farmed food crop region is attributable to a favorable location with respect to the main market in St. George's, and, to the uniquely local attitude towards this type of farming.

The local attitude has undoubtedly been influenced by the settlement in this area of a community of people called "Bajans". They are largely of British origin. Their ancestors were originally exiled to Barbados from Cromwell's Commonwealth in 1655. In the mid-nineteenth century some of them moved to Grenada. They are an industrious people who are receptive to change and to the application of some scientific farming methods. They have influenced the negro farmer in the area, who now practices better methods than his counterpart in other areas. The presence of the "Bajans" in Mt. Moritz makes this district distinctive from the human standpoint. It, however, indicates the agricultural possibilities which exist for other areas once attitudes are made to change.

#### Soil Conservation and Fertility Control

On Grenada the peasant farmer has little traditional knowledge of "proven cultivation methods and rotations, and safeguards against erosion or against exhaustion of fertility."<sup>5</sup> Erosion and fertility depletion have proven less serious in Grenada than in other comparable places. This is due to the

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<sup>5</sup>Vernon, Payne, and Spector, op. cit., p. 11.



proliferation of cocoa and nutmeg trees, preventing erosion, but also to the very rich parent rock material and to the additions of geologically recent nutrient-rich volcanic ash from Mt. Soufriere in St. Vincent.<sup>6</sup> The fertile soil and ash account in part for the adherence to traditional practices which have proven adequate in Grenada, but which would have been unlikely to do so on other islands.

Nevertheless, . . . , erosion is to-day and will remain an ever-present menace to Grenada's agriculture unless sound and efficient methods of land use are widely applied.<sup>7</sup>

As in most food producing areas on the island, land in Mt. Moritz is characterized by slope greater than 20°.<sup>8</sup> This creates cultivation difficulties especially in districts where rainfall is in excess of 60 inches. So as to minimize erosion, drainage ditches are dug, contour grass barriers are planted, and contour furrows are created. (Figure 9 and Plate III).

The last named measures are created by down hill hoeing, which Shephard considers to be the main cause of erosion, as soil is invariably dragged down the slope during the annual construction of new furrows or banks.<sup>9</sup> Thus, a paradoxical situation arises with respect to erosion control. In Mt. Moritz the farmers have taken up the incentive given by the

<sup>6</sup>Ibid., p. 12.

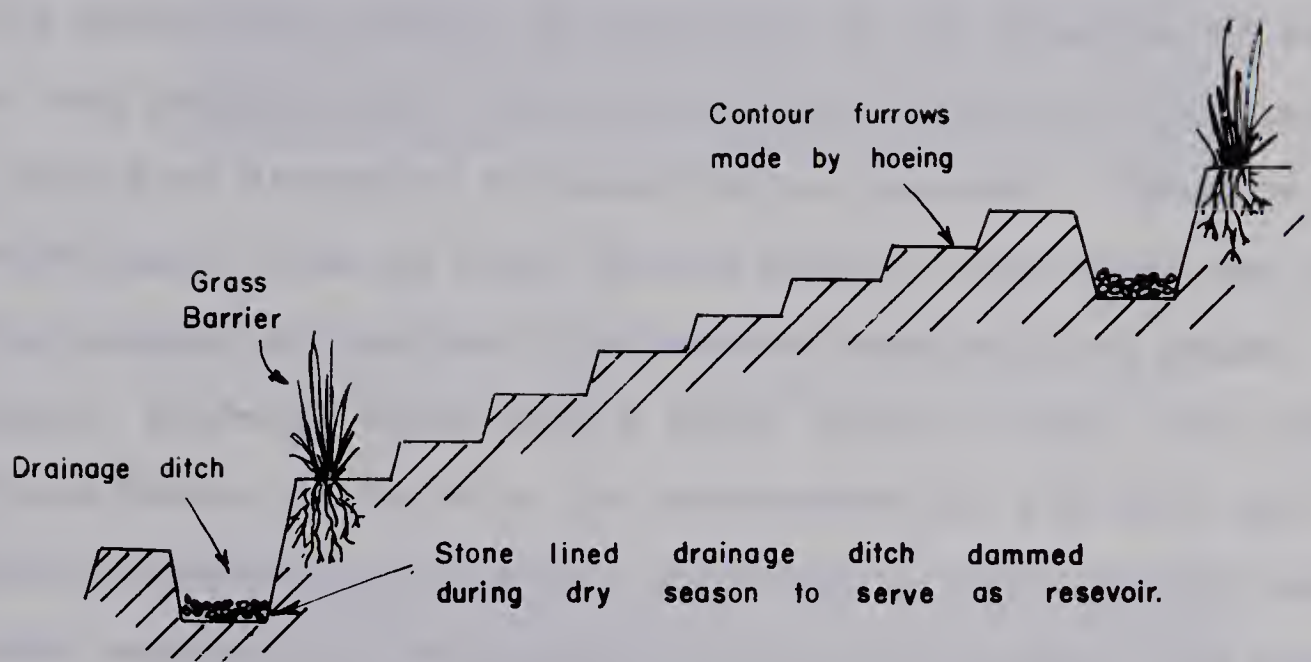
<sup>7</sup>Loc. cit.

<sup>8</sup>Ibid., Soil Maps #1-3.

<sup>9</sup>C. Y. Shephard, Tropical Agriculture, Vol. 24, p. 65.







## SOIL CONSERVATION MEASURES

FIGURE 9



Department of Agriculture through the payment of subsidies on the installation of approved ditches and grass barriers. The grass barriers usually consist of Elephant, Paspalum purpureum, or Guinea, Panicum-maximum, grasses which make good fodder for cattle. In other parts of the island the previously advocated Khus Khus grass, Vetiveria zizanoides, was more in evidence. It was found that this coarse grass is unsuitable as fodder, and its dense root network is conducive to the breeding of rats. Other food growing areas such as Vendome, Willis, and Constantine paid less attention to conservation measures. Farms in the south-east, such as those around Munich, were noted for a general absence of drainage ditches and especially of grass barriers. Plate IV shows such a field in the region. The Caliste and Woburn district in the south-west had few soil conservation measures of any kind. Admittedly, there is less need for such measures as the topography is less steep and the amount of rainfall lower. Nevertheless, the evidence of erosion would suggest the need for more ditches and grass barriers.

Some of the variations in soil conservation measures within these food producing areas are often in direct proportion to the interest and emphasis expressed by the agricultural instructor. In the Mt. Moritz district the agricultural instructor was keen to develop and improve cultivation practices in the provision grounds. His enthusiasm is seen by the results within the farming area. In other districts, the instructors have made great progress in establishing conservation







Plate III. Contour furrows in Mt. Moritz. planted in tannias to the left and sweet potatoes to the right.



Plate IV. Cassava plot near Munich showing lack of conservation measures for land in slope.



measures in the export crops, but interest in food crops would appear incidental, consequently drainage ditches and grass barriers were commonly ignored in provision grounds.

Practices such as planting, weeding and manuring are often indicative of the farmer's attitude toward his provision ground. In Mt. Moritz the land is generally cleared thoroughly in preparation for a new crop. Weeding is carried out in a systematic way with the small hoe being used as the major tool. The same situation was true for Vendome, Willis, and Constantine although the same thoroughness in these tasks was not evident. Around Calliste and Crochu many plots were only half-cleared before being planted, in some cases the land was cut-lassed and the top surface lightly scraped where plantings were made. Plate V shows a recently planted corn field in Crochu. A general shortage of labour was cited as the cause for such a practice, though this did not seem a valid excuse in all circumstances, and was more a manifestation of the farmer's uninspired attitude to food crop farming.

The application of pen manure, mulch and fertilizers is also an indicator of land management. In the Mt. Moritz area manure was well utilized. A cow and/or donkey, were usually penned in various parcels of land where the manure was to be used. In many instances donkeys were kept solely as a peripatetic manure "machine". The manure is well worked into the soil. Mulching of crops is also done during the growing season, as is sprinkling of artificial fertilizer over seed









Plate V. Corn field in Crochu.



Plate VI. Interplanting of French beans and tannia.



beds, the type and quantity being advised by the agricultural instructor. The Crochu-Munich district resembled Mt. Moritz in that donkeys were kept principally for manure, being moved from one pen to another on the various fragmented lots. Artificial fertilizer was seen to be used in isolated cases, but more as an afterthought, with what probably remained after the export crops had received their application. The drier districts in the south around Woburn and Calivigny, where sheep, goats, pigs and donkeys were more numerous, showed some evidence of manure application, but as most of the animals were not penned, but tethered, the gathering of this commodity was considered tedious. Around Calliste dung from cattle was left to fester in fields rather than be gathered and applied to the food crops. The attitude here reflects the subordinate position of food crops to the lime groves and livestock which receive more attention.

### Intercropping

The term intercropping implies the cultivation of two or more different crop-plants in the same lot. For example, a common practice is to plant tannias and French beans in the same hole (Plate VI). There are two distinct types of intercropping; i) that of two or more food crops being combined and ii) that of food crops being interplanted with export crops.

In the first type there are many variations of interplanting practiced, but usually there is some basis for the combination. There appears to be some value in planting a







leguminous crop in the same hole as a root crop. The bean or pea, will produce and be harvested long before the tannia has fully developed, but in the meantime, nitrogen in the form of nodules will have been added to the soil. Despite this apparent advantage, such cultivation is not advocated by the agricultural instructors. They argue that it is an inefficient means of farming, as it makes difficult the application of fertilizer,<sup>10</sup> the control of disease, and the spraying of crops and weeds. In some cases, the first crop to mature may prevent the second crop from getting sufficient light. While harvesting the first crop the soil around the second crop can become compacted by trampling, thus restricting growth.

The variations of intercropping show little significant difference from district to district among the food producing areas. In Mt. Moritz, a common practice is to plant alternate rows of different crops such as yams and tannias. Combinations of this sort were thought to do better together than when planted separately. This practice, though a variation on planting in the same hole, was not supported by the agricultural instructors for the same reasons as previously mentioned. Another common combination is to interbed dasheens, tannias, or eddoes. For plants botanically so similar, there seemed little objection to this practice, although any advantage is difficult to imagine over pure beds of these crops. Interplanting

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<sup>10</sup>The requirements of one crop not being the same as another.



appeared to be more common in the isolated areas. This was seen in Crochu where cow peas, corn, and tannias were planted in the same hole, and harvested in that order.

In some cases intercropping reaches ludicrous proportions. This was usual in the kitchen garden or its extension, where the number of crops in one bed can be over fifteen. (Plate VII). Usually the farmer realizes this is a poor practice, but for traditional reasons and domestic convenience the practice has persisted in many areas.

There is local variation for food crops being interbedded with non-market crops. These variations are related to the nature of the crops. In the establishment of land for export crops, particularly cocoa and bananas, there is room for food crops to be interbedded between these trees. The bananas will take about a year to establish themselves, consequently, for the initial six months, food crops can be grown. After four or five years of producing, the annual bunch of bananas becomes uneconomically small, and the banana tree requires replanting. This means that one-fourth or one-fifth of the land will be replanted each year, thus offering the opportunity to have this land interplanted with food crops and banana stems. Another situation exists with cocoa. Often in the initial preparation of land for cocoa seedlings, root crops might be planted so as to prepare and aerate the soil. With the planting of the cocoa seedlings, bananas, bluggoes, plantains, cassava, tannias, and pigeon peas, may be interplanted as







Plate VII. A kitchen garden, an example of intercropping corn, French beans, squash, sweet potatoes, and tannias growing in the same plot.



Plate VIII. Lime on a stick in a plot of corn to ward off "Mal Joux" in the Crochu district.



temporary shade crops.<sup>11</sup> Such crops are gradually reduced and completely removed by the time the trees are five or six years old. For many a farmer this kind of interplanting provides the main source of his marketable food crop produce.

In the drier south where sugar cane is the principal cash crop, food crops are commonly interplanted with recently planted cane. Eddoes, yams, corn and cow peas are harvested at the end of the three to six month period before the cane was well established, to provide a closed canopy. Usually these crops were planted between the rows of cane, but in several instances it was noted that they were scattered in mixed confusion throughout the sugar cane field. Such practices are being discouraged by the agricultural instructors.

#### Superstitious Practices and Beliefs

The extent to which superstitious practices exist in food crop areas can be some indication of the general attitude and educational level of the peasant farmers. Especially among the older farmers, belief in the supernatural is strong. As for the younger generation who have more education, some of these practices are dying out. In some cases it is difficult to determine where superstition ends and tradition begins, as both are somewhat related. For many, there is great reverence for the practices of previous generations, hence tradition dies hard amongst the great majority of peasants, despite the influence of "education".

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<sup>11</sup>Wood, op. cit., p. 163.







One common belief is in the influence of the moon. Depending upon the particular phase of the moon, certain agricultural activities are best performed or postponed. When there is a full moon any crop that is planted is considered to be sure to give poor yields, and disease is likely to affect it. With the 'moon in the grave', i.e. in last quarter, and up until the first quarter, it is the optimum time to plant anything that will produce above the ground. From the first quarter to the full moon is the time to prune, as it is thought that this will result in good crops and harvests. During the time just following the full moon, until two or three days before new moon, is a suitable period in which to plant crops that produce underground. The new moon and the three following days are those during which lunar influences are considered weak. Any crop planted in this period will give poor harvests.<sup>12</sup>

Many of these beliefs are substantiated in "MacDonald's Almanac", (a source of information for North American farmers of earlier decades). This American astrological publication would appear to be the most influential agricultural literature the peasant reads. It is estimated that two out of every three farmers on the farms visited had a copy, and if they did not adhere to it readily, they were swayed by what it predicted.

Another belief, not quite so common, is in evil spirits. This is deep rooted and is considered to influence most aspects

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<sup>12</sup>From conversation with an agricultural instructor.



of peasant life including farming. Should anyone pass complimentary remarks about a plot of corn or a healthy calf, the owner may consider that a "Mal Joux"\* (evil spirit or evil eye) has been cast upon his corn or calf. To ward off such spirits he must take precautionary measures, which may include the putting of a lime, or piece of red cloth on a stick, within the corn plot (Plate VIII), or the tying of a piece of red cloth about the calf's neck.

Such beliefs, besides being prevalent among the older generation, are most prominent in the isolated parts of the island, such as in the Mamma Cannes - Crochu district. Some adherence to the moon cycle for planting times was evident in Mt. Moritz, but generally the farmers here had experienced the benefits of more authenticated scientific methods. In the Munich, Mt. Cassels, Crochu, Woburn, and Calliste districts superstition was regarded seriously. As a result their agricultural development has been hindered.

#### Traditional Practices

Some of these have already been alluded to in connection with mixed planting, for example the sowing of peas, corn, and tannias in the same hole. Another instance is the use of one piece of land for a definite combination crop, because some former ancestor had used that combination and received exceptionally good yields. Thus a tradition was established for using that plot for specific crops. An inheritance from the

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\*Probably a corruption of "mal des yeux".





slavery period is the arrangement of crops within a given plot. In those days when praedial larceny\* was common, and even encouraged among the slaves of various estates, some measures were taken to protect the provision grounds. Around the edge of the plot pigeon pea bushes or cassava would be planted to act as a visual barricade. Inside this there would be rows of yams or ground provisions, while in the centre of the plot would be the easily and casually harvested crops such as corn, cucumbers and squash. Such practices are maintained to-day, although larceny is no longer a problem.

A similar situation arises with the tools used. The unstated philosophy that "what's good enough for father is good enough for me", is still so engrained in the peasants' thinking that change is wrought only slowly. Together, tradition and superstition are two great forces restricting the peasant farmer from adopting more efficient and economic methods of production. They represent a millstone about his neck; unfortunately it is one to which they are oblivious and which will have to be dealt with in a deliberate and modern manner through education and the establishment of incentive methods.

#### Food Crop Producing Areas

There is some degree of specialization within the principal food producing districts especially with regard to the produce taken to market. Figure 10 shows principal produce

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\*Petty thieving.



# GRENADA

## FOOD CROP AREAS

### LEGEND

#### VEGETABLES

- Cabbage
- ▼ Carrot
- ◇ Cassava
- △ Chive and Thyme
- ⊙ Corn
- ▣ Dasheen
- ▤ Eddo
- ▥ French Beans
- ▧ Lettuce
- ▨ Pigeon Pea
- Pumpkin
- ▲ Sweet Pepper
- ⊕ Sweet Potato
- ▩ Tannia
- ⦿ Tomato
- ⊗ Yams

#### FRUITS

- B Banana
- Bl Bluggo
- Br Breadfruit
- L Lime
- M Mango
- P Plantain



FIGURE 10





from food growing areas. In general the nature of the specialization reflects climatic regimes, local tradition, and attitudes of the individual farmer. Soils do not seem to be as significant a factor as might be expected. Where variations within an area exist it is more likely attributable to the degree of slope and soil drainage, rather than to soil type. The former are more readily appreciated by the farmer than is the latter.

Areas of specialization seem related to areas of optimum growing conditions for the particular crops. In cooler mountainous areas where rainfall is plentiful, crops which thrive in more temperate areas are grown. Hence cabbage, carrots, chives, and thyme are principal crops from Willis, Vendome and Constantine. Where rainfall becomes excessive, about 120", as in the Birch Grove - Mt. Pleasant districts, dasheens, tannia, bluggoes, and bananas predominate. In the very wet mountainous districts behind Crochu and Munich this is also the case. At lower elevations where higher temperatures, more abundant sunshine, and lower rainfall are characteristic beans, corn, peas, lettuce, tomatoes, and sweet potatoes become more prevalent. Mt. Moritz is an example of such an area. In the drier areas, crops which are relatively drought resistant are numerous. Thus, along the south coast, cassava, and some ground nuts are found. Most tree crops are widely distributed in those areas where rainfall is in excess of 60 inches. The drought resistant citrus, especially limes, were an exception



as they become more common in the semi-arid parts of the island.

One district not yet mentioned in this study, and one noted as a specialized food crop producer is Morne Jaloux, to the south-east of St. George's. The evidence here suggests that there is a limited trend towards well-organized "truck farming". Businessmen who are employed in St. George's have arranged to have labourers work three to four acres intensively under food crops. The produce is generally of high quality and is destined to super markets, hotels, or government institutions near St. George's. A wide range of vegetables is produced. The crops include lettuces, tomatoes, string beans, yams, sweet potatoes, tannias, sweet peppers, chives and thyme. Most of these crops are cultivated in pure stands, are well-manured, fertilized, and dusted with insecticides. Only a few similar operations were noted, but there would appear to be a trend in this direction among the farmers in the immediate vicinity. It is along lines such as these Morne Jaloux enterprises that local government authorities see the future development of food crop farming. It is anticipated that increases in the tourist trade will give greater incentive for the production of high quality crops and will lead to the abandonment of traditional farming methods. This trend cannot be left solely to the demand created by tourism, but must be stimulated by marketing security, by greater provision of agricultural information, and by other educational and motivational measures.





### Demonstration Food Farms

In recognition of the importance and problems of food crop farming, the Department of Agriculture in 1966-67 established two demonstration food farms on the island. The aim of these farms is to show that food crop farming can be a year round operation and that seasonality of production can be prevented by the use of irrigation, a fact which traditional methods of farming are now incapable of effecting.

Both farms consist of two separate units each of two acres in size. Both farm sites are beside principal roads on alluvial soils, one near the mouth of the Beausejour River in the west, the other near the Simon River in the east (Figure 2). Such sites permit convenient roadside viewing and facilitate the installation of irrigation pumps and sprinklers. In addition to irrigation equipment the labourer assigned to the farm is supplied with a three room house and a dairy cow. With this as a basis, and with the application of correct farming methods, it is hoped to intensify production of fresh vegetables, to maintain a constant supply to the local market during the year, and to give a worthwhile income to the labourer. Plate IX shows some of the crops cultivated and the methods employed. Pure stands of crops on these farms are in marked contrast to the organization of the ordinary provision grounds previously described. These farms are being carefully supervised by the agricultural instructors responsible for the area. It was they who determined the layout of the seed beds, the tillage





Plate IX. Beausejour Demonstration Food Farm showing irrigation sprinkler, good agricultural methods and labourer's house.





methods used, the time and duration of irrigation, and the type and application of fertilizer, pesticide and weed killer to be used. With the exception of irrigation equipment the tools used were the same as those employed in most food crop areas, hence there was no break with tradition in this respect.

Although it is premature to state the success of these demonstration food farms, it is thought that the example given to the passerby must surely make its point. The plants appeared to give higher yields, and the produce to be of superior quality to that generally seen in the market.

#### Present and Future Problems

The whole approach to food crop farming represents a burden to the economy of the island. The prospects for alleviating this burden do not appear bright if present attitudes continue. Efforts are being made by the Department of Agriculture to improve the situation. Unfortunately not all the problems are directly associated with agricultural techniques. The Department is realizing this as some of its well intended plans are failing in their desired objectives. Some of the factors for this are lack of government support, and general civic apathy and disinterest in the problem.

The most disheartening prospect is the evidence that the amount of land in food crops is declining despite the growth in population. If the figures of imported foodstuffs are an indicator, then the fact they show increases from \$3.48 million (W.I.) in 1959 to \$5.45 million in 1965 would tend to be signi-



ficant. This increase cannot be accounted for by population or tourist increase, nor the increase in the cost of living. Other factors are present. One of these is a stagnation if not a decline in local food crop production. The desirable economic situation recommended for economic improvement in the island is to have production increasing at a rate greater than the population increase, i.e. at a rate greater than 2.5% per annum.

Further evidence of decline is that former food crop land is now lying abandoned, or at best being converted into tree crops.\* This reflects in part the trend of growing urbanization on the island, which in turn seems attributable to the educational system. Education of the farmers' children does not encourage them to continue in the fathers' footsteps. As previously alluded to, the farmers and especially those specializing in food crops have a lowly status in local society. Even the farmer is proud to see his educated son find employment with higher status and recognition. Agriculture training in most schools is sadly neglected, and although some schools have a school garden and perhaps a 4H club, they are not treated as part of the curriculum deserving great emphasis. The schools are essentially run on traditional British lines and hence designed to turn out clerical workers. For an island which is dependent upon agricultural exports this is to-day surprising.

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\* Estimated by one Mt. Moritz farmer that fifteen years ago there was 1/3 more land than there is today in that district.





All the more so when it is realized that the 1938-39 West Indies Royal Commission recommended that,

The primary curriculum should in its later stages include . . . manual and agricultural teaching for boys; and domestic training . . . for girls. More junior secondary schools should be established giving training in practical subjects: these schools to be treated on an equal footing with the more academic secondary schools in regards accommodation, equipment and teaching staff.<sup>13</sup>

Education should be more directly oriented to the needs of the country - certainly Grenada and many other islands in the West Indies seem slow to reform their educational philosophy.

Schooling has had the detrimental effect of educating the student away from the soil. Many teenage children find it "beneath their dignity" to assist their parents on the land, even at times when labour is desperately needed. There is little likelihood that they will work the land once their parents are no longer able. This often results in the land being put up for sale or abandoned.

In other cases land is being taken out of vegetable production and put into tree crops. This trend may be due to the farmer's physical inability to cultivate the same amount of land under food crops. As his family grows up and becomes less willing and available to work on the land, the farmer is faced with a labour shortage. As a rule hired help is prohibitively expensive for the food crop producer, so a solution

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<sup>13</sup>H.M.S.O., West India Royal Commission 1938-39, Statement of Action Taken on the Recommendations, London, 1945, p. 14.



open to him is to convert his land into tree crops which warrant less work and attention. Thus, former provision grounds are being transformed into orchards of cocoa, nutmeg, or bananas. Such a transition need not arise solely from a labour shortage, but results also from a desire for personal security. In the past, the food crop market has been obviously insecure. Now that co-operative organizations for export crops have become firmly established and offer fixed prices and a definite market for quality produce, there is an attraction to these crops. This illustrates one of the inadequacies of the local market organization which does not yet give the farmer guaranteed prices.

Other problems arising within food crop production are:

i) a lack of farm records, whereby the farmer can relate cost of production to sale price and profits.

ii) The seasonality of production and the inadequacy of preservation and storage facilities, cause a national reliance upon imported goods for part of the year. In some respects this has led to a year round reliance on imported food-stuffs.

iii) an unwillingness or unawareness on the part of the farmer to discard his traditional practices and beliefs, thus hindering the acceptance of more modern farming techniques.

iv) an insufficiency of soil conservation measures by the peasant farmer is leading to soil depletion and erosion which the island can ill-afford.





Such problems require immediate attention if food crop production is to keep pace with the growing population and tourist trade, and at the same time reduce the imbalance between the value of imports and exports.



## CHAPTER SIX

### THE PRESENT DAY LOCAL FOOD CROP MARKET

The market place is a prominent institution in the life of the peasant, especially of the women folk. Besides serving an economic function, it plays a significant social role. Over all the island, Saturday is market day, and for many peasants it is an excuse to "dress up" for the weekly pilgrimage to town, to renew acquaintances, and to exchange the latest local gossip. At the same time the farmer's wife is selling the family's surplus food crops there.

The principal public markets are those at St. George's (population 7,500) and Grenville (population 1,817), with minor ones at Gouyave, Victoria, and Sauteurs. The two major markets will be discussed in some detail. Their significance and importance is seen from the market flow diagrams of the two towns. (Figures 11 and 12). The flow diagram for St. George's market illustrates that the majority of sellers come from the southern half of the island. The Grenville market caters mainly to farmers on the eastern side, except for those who come from the Willis-Vendome area. These flow diagrams also indicate the principal food-crop growing districts on Grenada. The three smaller markets serve food crop producers in the north-west quarter of the island.





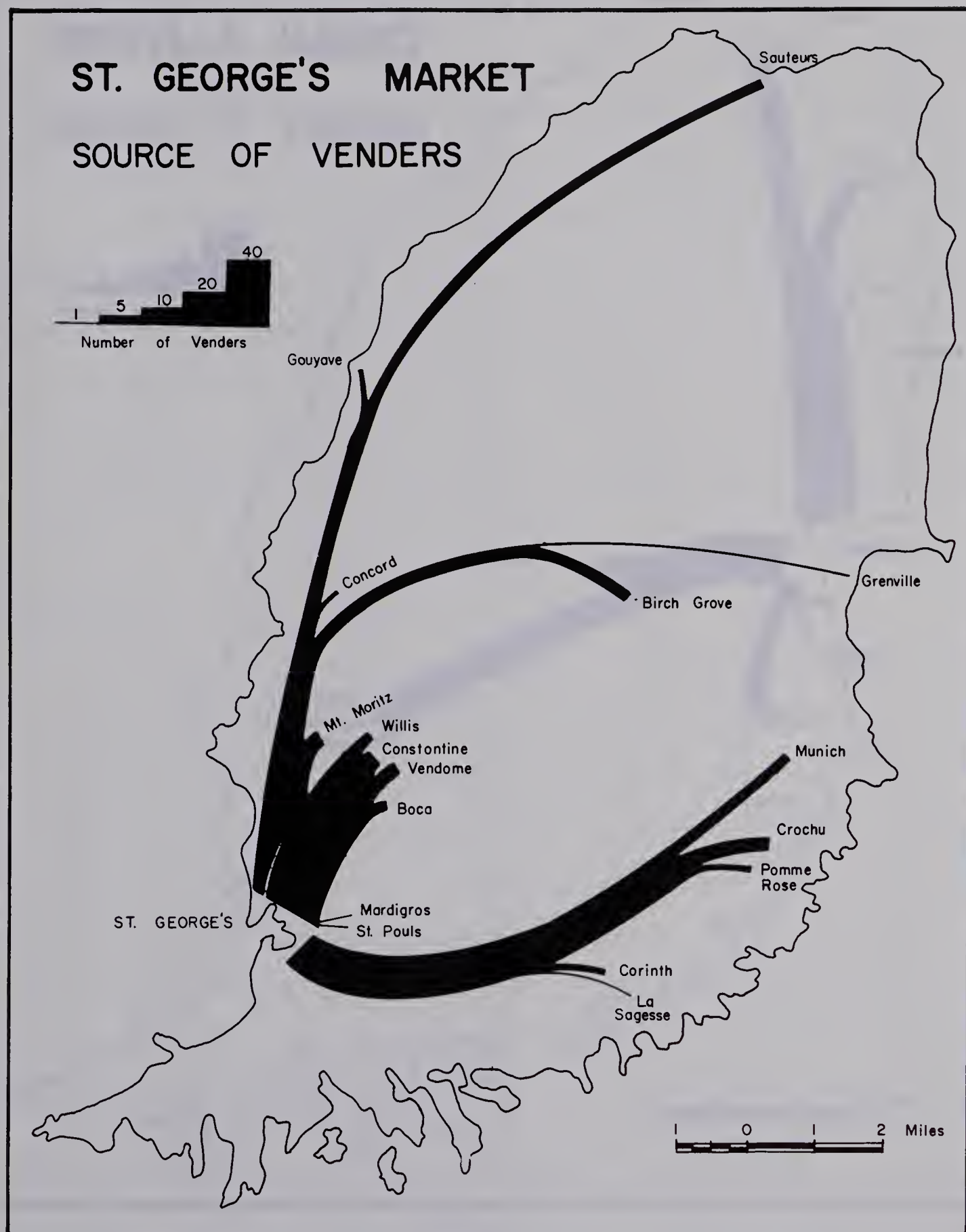


FIGURE II



# GRENVILLE MARKET

## SOURCE OF VENDERS

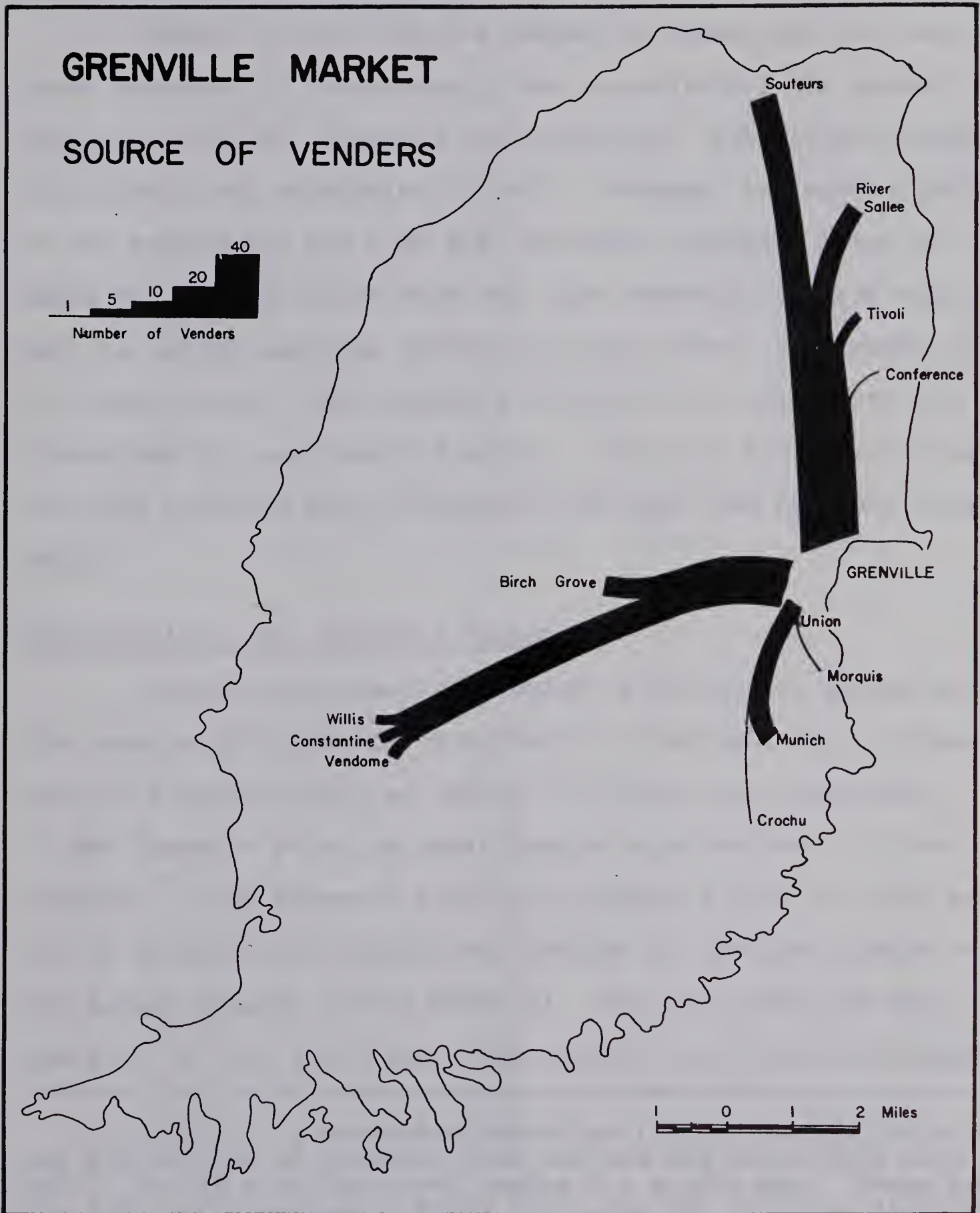
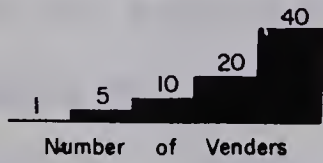


FIGURE 12





### Transportation

Travel to and from the market is essentially by bus, whose terminus is traditionally and conveniently the market square in both St. George's and Grenville. The sellers bring their fruit and vegetables in sacks, baskets, and wooden crates to the market for the 6.00 A.M. Saturday opening. Prior to World War II when buses were far less numerous, sellers would walk to market carrying produce on their heads, on donkeys or in donkey carts. This normally restricted the radius of the hinterland to less than six miles. Since the War, the bus service has improved and the market hinterland has expanded accordingly.

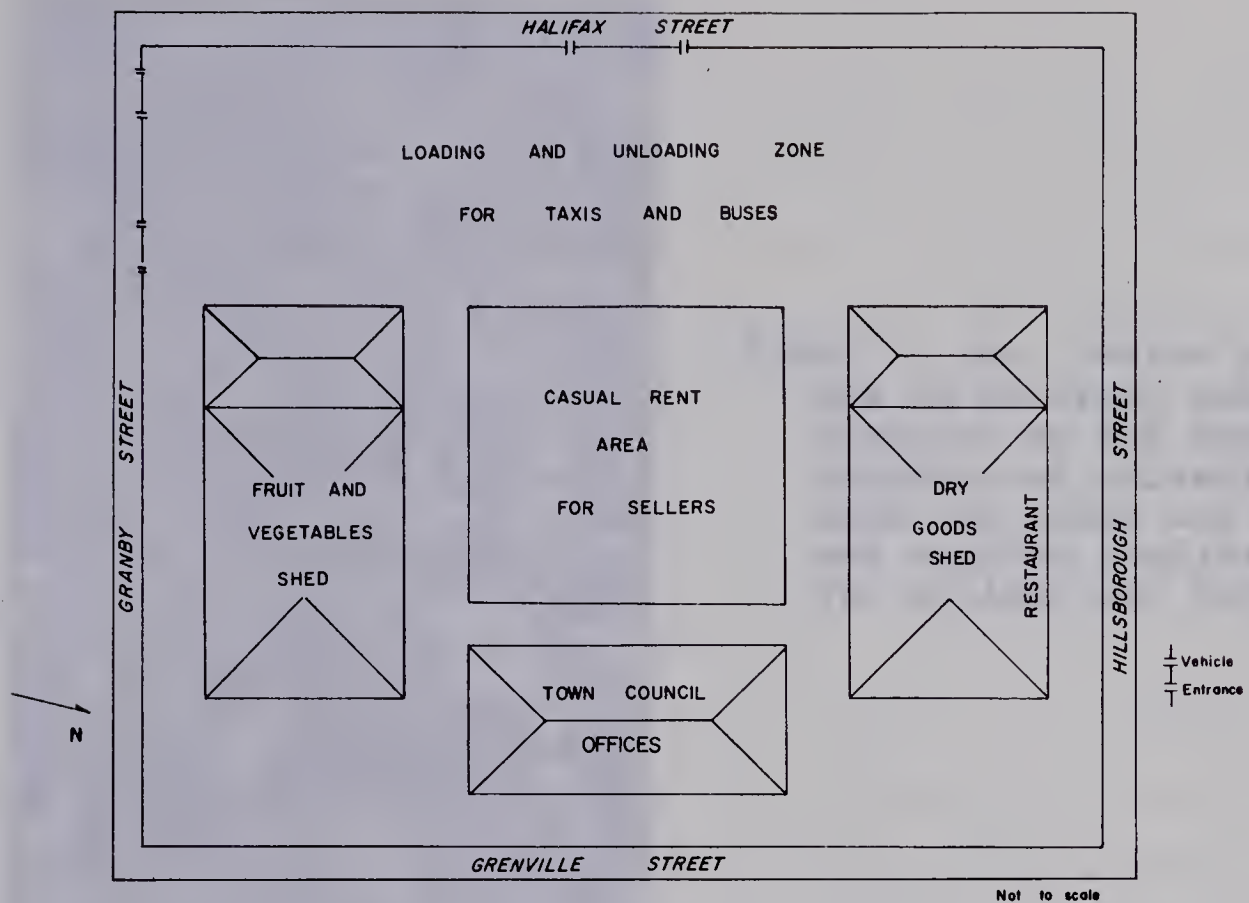
### Organization - St. George's Market

There is an underlying order to the market system and the example of St. George's serves to illustrate this. There are two distinct types of venders of fruits and vegetables, i) the farmer's wife, or other female relative, and ii) the huckster.<sup>1</sup> The farmer's wife will generally come into the market on Saturday and display her produce in the open square on the ground (Figure 13 and Plate X). She will rent her small space at 5¢ (W.I.) per day. Her location in the market square

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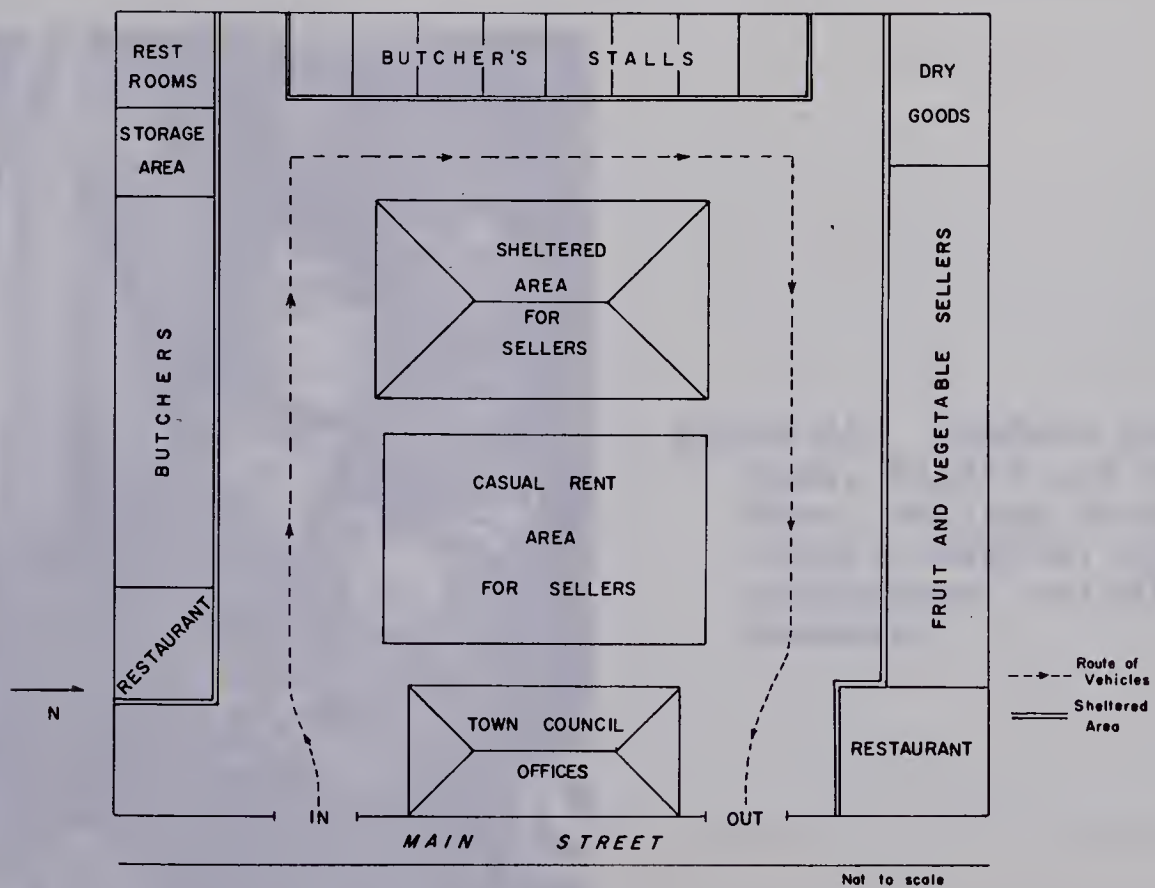
<sup>1</sup>This is a woman who makes her living through the buying and selling of produce which she has not cultivated herself. She is a professional trader - a middle man. There are two types of hucksters. First the woman who will buy directly from the farmer and bring the produce to sell to a second type of huckster who sells the produce in the market. Some combine the task of collecting from the farmer and selling it in the market.





PLAN OF ST. GEORGE'S MARKET

FIGURE 13



PLAN OF GRENVILLE MARKET

FIGURE 14







Plate X. St. George's market on Saturday showing displays on the ground, loading and unloading zone for buses and taxis, and crowded conditions for selling and buying.



Plate XI. Venders from Vendome, Willis and Constantine, selling chive, thyme, carrots, ground provisions, calialou and bananas.



is usually fixed by the district from which she comes. Hence sellers from Vendome, Willis, and Constantine are often grouped together, and, with their added crop specialization, there tends to be a section of the market specializing on the sale of chives, thyme, carrots and ground provisions (Plate XI). This facilitates comparative buying and at the same time permits the exchange of neighbourhood news. The vender's produce is arranged in heaps and a price fixed for each heap. (Plate XII). The price can vary with her whim and frequently will be lowered through bartering. Towards the end of the day, or when the farmer's wife has gained sufficient returns, she may lower her price so as to dispose of all her produce. Alternatively she may sell out to a huckster on the spot. This allows her time to leave the market place in order to shop for household necessities. Some farmers' wives come into the market during the week as the market is open week days from 7.00 A.M. until 5.00 P.M., Thursday being a weekly half-holiday. On week days the market is comparatively empty with less than 20 venders present.

Hucksters use the shed to the south side of the market for their business. Inside this shed are 200 stalls, (2' x4' in size). These are rented at \$1.00 (W.I.) per month. Many of the hucksters usually occupy three or four such stalls for their Saturday sales. The shed facilities are equally open to other venders, such as farmers' wives, who wish to use them and who are prepared to pay the monthly rental. On the Saturdays when the writer visited the markets, there were only 13 hucksters









Plate XII. St. George's  
market showing produce  
arranged in heaps.



Plate XIII. Grenville market on Saturday showing displays  
set up on trestles.



present out of an estimated total of 150 food crop venders. The former are identifiable from the diversity and volume of their produce. Usually they have for sale some 15 to 20 different food crops, while the average producer-vender has less than half that number for sale and a considerably smaller volume. Most of the hucksters have weighing scales, although not all their produce was sold by weight. The hucksters through experience are well aware of the daily supply and demand situation of various foodstuffs and juggle their prices accordingly to assure themselves of maximum sale at a fair rate of return. At the end of the day she may lower her prices on the remaining perishable goods, but not to ridiculously low prices, as she most likely has an "arrangement" with a hotel or other institution to buy them from her for a guaranteed price. Some hucksters are known to give this produce to churches or other charitable organizations. (This is more usual at the times of church harvest festivals, although the Roman Catholic church has a number of outlets at other seasons of the year.) The non-perishable foods she will leave in the shed and sell on weekdays. About half the hucksters continue to sell their produce during the week, each day perhaps having her supply replenished. Imported produce, such as vegetables from Trinidad, (Figure 2) is also handled by some hucksters who are agents for Trinidadian farmers.

Other goods too are sold in the market. The shed on the north side of the market square serves as a selling place





for dried goods, such as soap, basketwork, dried fish and meat, split peas, cornmeal, rice and milk powder. It also has a restaurant. Another feature of the market is the presence of refreshment and confectionery venders plying their trade under the eaves of the sheds. There were an estimated 200 venders of all kinds active in the market on the Saturdays visited.\*

#### Management of Market

The market is controlled by the municipal authorities. Four clerks are responsible for collection of the rents, for supervision of the display area each vender occupies, and for the opening and closing of the market. They have no jurisdiction over prices or quality of produce sold. Sanitation is the concern of the island's Department of Public Health. To all appearances however, a blind eye seems often turned on this aspect of market management. After each market day the area is swept and washed.

#### Grenville Market

In most respects this market is better organized than its St. George's counterpart (Figure 14). It is more spacious, outside displays of foodstuffs are put on trestles and conditions are generally more hygienic (Plate XIII). An added feature is the presence of butchers' stalls. (In St.

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\*This number has seasonal variation. It was estimated by a market clerk that an additional 50 venders, mainly food crop sellers, were present at peak seasons such as in January and February.



George's these facilities are separate from the main market.) The market is smaller having an estimated 100 venders present on the Saturday visited by the writer. The same variety of foodstuffs can be bought, although prices were noted to be lower than in St. George's.

### Supermarkets

A post World War II development is the establishment of supermarkets. In the summer of 1967 there were four in the town of St. George's, and they cater to tastes of North American and European residents, and tourists, and to the local middle class. The majority of foodstuffs they sell are European, Canadian, and American imports, including a large variety of canned and frozen goods. They do sell some local fresh fruits and vegetables which are usually of high quality and at a much higher price than offered in the market square. The quality and variety of their produce are limited, so they offer little direct competition to the public market, but rather complement it. Unfortunately, supermarkets are having an adverse effect upon national tastes, as even the peasant himself wants to sample the flavour of canned fruit and vegetables. He seems convinced that canned produce is superior to fresh, and will buy tinned Hawaiian pineapples in preference to local fresh ones even though he cannot justify this luxury. Such attitudes are helping to develop new tastes, to increase the volume of imported food, and consequently to discourage home production.





### Present and Future Problems

The market place serves as a major incentive for the peasant farmer to produce food crops beyond his own domestic needs. By having some land in food crops it not only diversifies his farming operation, but more important it offers his wife the opportunity to obtain some weekly cash. Most farmers are content with sending a meagre trickle of produce to the market each week. There is little to motivate them to expand their food-crop production. The inadequate market facilities in St. George's and the absence of any guaranteed prices only tend to discourage production.

A major problem with respect to the St. George's market is the fact that present facilities seem not to have kept pace with the growing population demand. The crowded, poorly lit, and unsanitary conditions are not conducive to either good buying or selling practices, and only degrade the status of the venders and their clients. It is partly for this reason that the growing middle class are willing to sustain the higher costs of the new supermarkets. In 1958 in a report on "Marketing in Grenada", Biggs described the St. George's market as being,

. . . old, to a very large extent ramshackle, inadequate in the facilities provided and dirty. . . . What is needed is a new up-to-date market, embracing all selling activities, or preferably, on a new site away from the town centre (if possible) where it leads to very considerable congestion.<sup>2</sup>

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<sup>2</sup>H. C. Biggs, Report on a Visit to Grenada, Marketing in Grenada, unpublished, 1958, p. 9.



Since then no significant improvements have been made and the problem is becoming more acute. An editorial in the local newspaper more recently took up the cry for the need to extend the present facilities. It states,

. . . the buses, the taxi cabs with all their crudities and barbarities must either be reduced in number or moved to some other location which must be prepared for them. There is need for more space, more air, less of the smell of gasoline about the market. We would welcome the peace, the order, the cleanliness and the atmosphere that exists in and around the Grenville market.<sup>3</sup>

Now that the public are being made aware of the need for improvements, local authorities might be spurred to action on this matter.

The market has failed to offer a secure outlet for the peasant's produce. This can be blamed to some extent on a general absence of protective tariffs on imported vegetables from Trinidad or even Europe. The local farmer is wont to compete with this cheaper produce and hence is discouraged from increasing production. It is only within the last five years that taxes and restrictions have been placed on imported vegetables. The following unprocessed vegetables are the only ones taxed: Irish potatoes, beans, peas, lentils, garlic, and onions. (For tariff rates see Table III in the appendix.) As a means of controlling the volume of imports it has become necessary to obtain an approved Import Licence for the following produce:

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<sup>3</sup>The West Indian, St. George's, Grenada, July 20, 1967, p. 2.







pigeon peas, ground nuts, cabbage, corn, tomatoes, and rice. Canned fruits and vegetables have a small tax, but all frozen vegetables are exempt. How much of this is due to an earnest desire to encourage local production by protection from competition it is difficult to know. There is the other possible factor arising from the currency and exchange problems which are as real for the Caribbean as they are for Britain.

Another problem stems from the attitudes of venders themselves. The market womenfolk have acquired some peculiar economic notions about the prices to be obtained for their produce. This is attributable in part to the fact that most farmers do not keep records of production costs. This results in a selling price which is usually unrelated to the time, money and effort spent in cultivating the crop. The vender's idea of the price to be obtained is often based upon the highest price received in the past.<sup>4</sup> To achieve this they produce small quantities for sale. It is likely that greater profits could be obtained, if the grower aimed at selling more produce at a satisfactory average price, i.e., one more closely related to its production cost.

If the markets are to satisfy the growing domestic needs, then more incentives are necessary to convince the farmer that the production of foodstuffs can be a worthwhile business. A system of guaranteed prices and an outlet for surplus produce are two of the suggestions made by Biggs as a means of

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<sup>4</sup>Biggs, op. cit., p. 3.



promoting food crop farming. With respect to the guaranteeing of a minimum price he sees some difficulty, as this price would have to be fixed before planting. It must "not be biased in favour of one or other commodity by price difference as this can lead to a surplus in one and an artificial shortage in another."<sup>5</sup> An outlet for surplus produce was made between 1947-65 with the Government Market Organization. This offered a half-assured outlet for food crops, but not always at guaranteed prices. With this system the farmer was more or less certain of selling his fruit and vegetables. The function of this organization was to relieve the alleged food shortage after World War II. It was a government subsidized scheme, which, due to inadequate storage facilities, operated at a substantial loss and resulted in its being dissolved. The scheme, however, did not gain the confidence of the farmer and as a result no marked increase in food crop production occurred. This does not infer that such a system would be doomed to failure. It is thought that poor organization and lack of proper storage and preservation facilities were largely to blame for the collapse of this plan. Certainly if adequate cold storage and processing facilities were available the situation would have been radically different.

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<sup>5</sup>Biggs, op. cit., p. 8.





## CHAPTER SEVEN

### ASSESSMENT OF STATUS AND PROSPECTS OF GRENADIAN FOOD CROP PRODUCTION

Food crops have never enjoyed the same emphasis as export crops since plantations were established on the island. In those days food crop production was relegated to the less desirable land on the estate; a position from which it has not greatly improved. Following the breakdown of the plantocracy, colonial policy created the impression that for economic stability it was essential to increase export trade. This outlook persists into the twentieth century. With the assumption of responsible government by the indigenous peoples, national policy has been faithfully directed at improving Grenada's exports. To this end cooperatives for nutmegs, cocoa and bananas were established in the late 1940's. Even to this there was much opposition among the traditional exporters. However, they have proved immensely beneficial by making the markets more secure. The Department of Agriculture has been successful in educating the farmer of export crops to improve his farming methods as well as the quality of his produce. Government subsidies for plants, fertilizers and conservation measures were offered as incentives. The peasant farmer has found security in farming export crops as there is an assured market for quality produce. In addition there is prestige attached to the running of a



miniature "estate" operation and this attracts the peasant producer.

Such trends have encouraged the continuing neglect of food crop farming up until the past three years. Nevertheless the training of agricultural instructors, and the planning and support of research into plant breeding are still directed mainly at the export crops. This official attitude, and the utterly inadequate marketing and preservation facilities for foodcrops, are inescapable causes for the food crop status being in the deplorable state that it is.

Environmentally Grenada does possess a high potential for increased food crop production, provided the correct incentives and stimulants can be knowledgeably provided. The island has a relationship between cropland and population of 0.6 acres per head. This is more favorable than Barbados 0.3 acres per head, St. Vincent 0.3 acres per head and St. Lucia 0.5 acres per head.<sup>1</sup> Of the total cropland (51,000 acres), 23% is lying idle or abandoned.<sup>2</sup> This situation should not be tolerated, as under the climate and with fertile soils, this land could produce sufficient food crops for the growing demands of both Grenadian and tourist. To achieve this the peasant must be directed to improve his methods and expand his knowledge and production, and it is now the responsibility of the government to give them

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<sup>1</sup>O'Loughlin, C., A Survey of Economic Potential and Capital Needs of the Leeward Islands, Windward Islands and Barbados, H.M.S.O., London 1963, p. 185.

<sup>2</sup>Dept. of Agriculture, St. George's, Grenada, 1967.





this necessary direction through assured markets and other measures for their produce as has been done for the export crops.

To a large degree, the solution to Grenada's food production problem must lie in deliberately initiating appropriate economic incentives and in planning and supplying the necessary scientific agricultural advice. In finding solutions, even drastic ones, it will be necessary to conduct anthropological, psychological and sociological studies of the peasant farmer, in order to understand his way of life, his expectations and his philosophy. In the light of these studies, schemes for improvement and redevelopment can then be tailored to the needs of the peasant farmer. To be successful it will be necessary to have integrated cooperation between the government, the Department of Agriculture, the farmer and the general public.

Two major avenues of feasible solutions lie within Education and Legislation. It is under these headings that some solutions are being suggested below.

### Education

Education must be regarded as being a foremost priority, not only to solve problems of agriculture but also to ameliorate other social and economic difficulties. The whole population must be made aware of the role local foodstuffs play in the national balance of payments. They must become conscious of the need, not only to increase home production, but also to consume it in preference to imported goods. The local press



and radio can assist in creating this awareness amongst the population.

Formal education in the schools must give agriculture much greater emphasis in the curriculum. In elementary schools the teaching of science should incorporate instruction of the biological requirements of local fruits and vegetables. The school plot should serve as an experimental ground on which to test new plant varieties, irrigation, applications of fertilizer and modern cultivation methods. In domestic science classes girls can be trained to preserve fruits and vegetables, and to make jam. With this training, the reliance on canned produce could be reduced. In secondary schools and technical and vocational institutes, agriculture should be taught as a distinct and worthy discipline. Such a course should include the use and maintenance of mechanized farm equipment. Undoubtedly much of what would be learned in the classroom would be transferred to the farmers through their sons. This could influence the farmers to adopt more scientific methods. In this way the bonds of traditional conservatism might be broken more rapidly.

An enlarged and improved program of adult extension education should be more readily available in various communities on the island. This would open the way to increasing the knowledge of peasants who were unable to appreciate or have access to the benefits of education when of compulsory school age. Through this scheme extension officers from the Department of Agriculture could assist in teaching and introducing new farm-





ing methods. With education programs improved along the lines suggested above, the problem arising from the prejudice of working on the land is likely to be overcome. By adopting a more scientific approach and by utilizing modern methods of cultivation, food crop farming would become a more profitable and attractive occupation.

The Department of Agriculture needs to realign its thinking, to re-examine its aims, and refocus its efforts. Over the past two decades efforts have been concentrated upon improving cultivation practices, and controlling pests and diseases among the export crops. Until three years ago food crop farming received comparatively little consideration. Even at present it does not enjoy the same standing as export crops. In this regard the Demonstration Food Farms are a step in the right direction. Nevertheless, these farms may fail in their intended purpose of encouraging the farmer to grow a year round supply of food crops under more scientific methods. Both demonstration farms are located on land atypical to that on which the majority of food crops are grown in that they are on relatively level and fertile alluvium. One wonders whether or not a more appropriate approach would have been to site these farms on land of 20° slope and on clay-loam soils, i.e. on a more typical site. Certainly there are different requirements and problems confronting the use of irrigation in hilly terrain as opposed to alluvial plains. The peasant farmer might deduce that only flat alluvium should produce a year round supply of



food crops, and that his hilly terrain might be better utilized in tree crops. In addition these farms do little to enhance the status of the farmer, who must still spend unenviable hours of back-breaking labour with his simple tools. These demonstration farms should be introducing new tools and machines. It has been said that, "Rapid mechanization is as essential for agricultural improvement and rural development as are increased use of fertilizers and pest control chemicals."<sup>3</sup> If this is true, then the Department of Agriculture has failed to recognize this fact. There are several two-wheeled tractors of about five horsepower that could be used for cultivating, tilling, weeding, ploughing and trenching. They would not be prohibitively expensive, especially if credit became more readily available to reliable farmers. Such pieces of machinery could pay for themselves in four or five years. Since some of the same companies which produce motorcycles (to be seen in increasing numbers on the island) manufacture these cultivators, problems of parts supply and maintenance, need not be a restrictive consideration. Farming could then become a more attractive occupation as mechanization would help to reform the working activities.

Agricultural exhibitions and fairs are additional ways by which to attract the interest of the peasant farmer, and make him aware of recent developments in plant breeding and crop management. These exhibitions and fairs need to be more

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<sup>3</sup> "Rapid Mechanization for Peasants and Agribusiness", World Crops, Vol. 19, Oct. 1967, p. 10.





numerous and of a more local nature than they are at present. In this way they will appeal to a greater number of farmers.

There is a need to augment the training of agricultural instructors so that more emphasis is given to food crops. In the field they were often unable to give all the advice necessary for successful crop cultivation. In an attempt to correct this, the Department has recently introduced seminars on particular aspects of food crop production for the benefit of the instructors.

The Department of Agriculture has recognized that its approach to food crop farming has been inadequate. Despite this, the steps that are now being taken for the future appear too cautious and short-sighted for any long term benefit. The cause for this does not rest solely with the civil servants in the Department, but more often with the higher authorities who formulate government policy. It is they who control the future of the island. It is hoped they will have sufficient forethought to realize that tourism is not going to be the sole benefactor of the economy and that agricultural reorganization through education should be their principal concern, and not that of the forthcoming generation.

### Legislation

The local government can do much to stimulate the growth of food crop production by introducing new legislation and reforming much of the old. Unfortunately the Government appears



to believe strongly in the recommendations of the Tripartite Economic Commission for the Eastern Caribbean. This Commission suggested that tourism be the first priority. It is implied that through the expansion of this sector of the economy, food crop production would receive the necessary incentive. This has had some effect upon several better informed farmers in the south-west corner of the island where tourism is best developed, but for the great majority tourism is meaningless. A more direct approach is necessary if a substantial change is to be accomplished.

The government must demonstrate that it recognizes the importance of domestic food crop farming. This could be achieved in a number of ways: through the creation of a food crop cooperative, the stabilization of the local market, and the establishment of food storage and processing and preservation facilities.

The example of success given by the export crop cooperatives suggests that such an organization could be of benefit to food-crop production. Should such a cooperative be established it would be overt recognition that food crops have equal standing with export crops. If such an organization was efficient, it could achieve a closer liaison between the farmer and the market, and serve as an agency for the promotion of locally produced foodstuffs. At regular meetings of the cooperative, members could be instructed in new methods of cultivation, pest control and fertilizer application. A centrally controlled cooperative could plan an integrated program of food production





land use for the island. This would ensure more regular supplies of vegetables and avoid market gluts.

In helping to stabilize the local market, the government should impose more protective tariffs on imported foodstuffs. This would benefit the local farmer by minimizing his competition from abroad. It is argued that legislation such as this only supports the inefficiency of local production. (An inefficiency which reflects government neglect.) This need not be the case as the tariffs imposed could be based on a price with which the Department of Agriculture believes the peasant farmer should compete. Such a tax structure would need to be flexible and subject to regular revision. The increased tariffs would also encourage import substitution, e.g. the use of local pigeon peas instead of canned garden peas.

The construction of food storage facilities and a processing plant, would assure the farmer of a definite market for his quality produce. The less perishable foodstuffs, such as ground provisions, would be kept in cold dry storage for sale during the off-season. Perishable goods such as fruits, would be canned, and thus assist in providing a year round supply of these commodities. The machinery for such a plant would need to be capable of economic canning of small quantities of different produce at a time. Besides fruit and vegetables, local fish might be processed and canned.

Additional aid the government could give to increase food crop production would be in the form of subsidies. These



are characteristic of government policy towards the pampered export crops. The Department of Agriculture does subsidize the planting of fruit trees, the digging of drainage ditches and planting of contour grass barriers. To give encouragement to vegetable cultivation subsidies could be given to land over one acre<sup>4</sup> in size planted in legumes or ground provisions, and for the fertilizer necessary for their successful cultivation.

For the poor depressed areas of the island the government might establish a cooperative farm. The example set by Puerto Rico in this regard, indicates the benefits that can be reaped from such a scheme. More efficient land use could evolve. The level land could be devoted to food crops, that in gentle slope to dairy cattle, and the steepest land to tree crops. Such farms would alleviate problems of land fragmentation and poor land use. It could bring about rural rehabilitation and greater prosperity to such areas.

There is an urgent need for major change and improvement of Grenada's domestic food crop production. This can best be done by positive and concerted action on the behalf of the government. The suggestions for improvement that have been made are some possible avenues for future development. The complexity of the nature of the problem must not be underrated. The average peasant farmer has an intuitive wisdom, and in some respects an admirable philosophy on life - one that does not

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<sup>4</sup>Such a stipulation would probably be necessary or else kitchen gardens would qualify for this assistance.





necessarily view material gain in the same light as do more educated elements of the population. This means that some of the incentives have little or no significance for him. An attitude of receptivity to change and an understanding for it, need to be present in the peasant's outlook before his support is gained. New ideas and techniques can rarely be imposed, as they inevitably are introduced to overcome the habits of a lifetime. Preferably they should be grafted to the ideas and techniques already there. This will limit the steps of progress, but once the farmer is convinced of the benefits change can bring, and can justify them philosophically and through obvious progress, then the necessary momentum for advancement will have been gained. It is the responsibility of the government to overcome the inertia of tradition and conservatism which exists in the Grenadian peasant. If this can be achieved to the benefit of food crop production, then Grenada is likely to enjoy greater economic stability in the future.



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TABLE 1. SUMMARY OF DATA FOR THE 1950-1951 SEASON			
STATION	DATE	TIME	WIND VELOCITY (MPH)
1	10/10/50	1400	10
2	10/11/50	1500	12
3	10/12/50	1600	15
4	10/13/50	1700	18
5	10/14/50	1800	20
6	10/15/50	1900	22
7	10/16/50	2000	25
8	10/17/50	2100	28
9	10/18/50	2200	30
10	10/19/50	2300	32
11	10/20/50	2400	35
12	10/21/50	2500	38
13	10/22/50	2600	40
14	10/23/50	2700	42
15	10/24/50	2800	45
16	10/25/50	2900	48
17	10/26/50	3000	50
18	10/27/50	3100	52
19	10/28/50	3200	55
20	10/29/50	3300	58
21	10/30/50	3400	60
22	10/31/50	3500	62
23	11/1/50	3600	65
24	11/2/50	3700	68
25	11/3/50	3800	70
26	11/4/50	3900	72
27	11/5/50	4000	75
28	11/6/50	4100	78
29	11/7/50	4200	80
30	11/8/50	4300	82
31	11/9/50	4400	85
32	11/10/50	4500	88
33	11/11/50	4600	90
34	11/12/50	4700	92
35	11/13/50	4800	95
36	11/14/50	4900	98
37	11/15/50	5000	100
38	11/16/50	5100	102
39	11/17/50	5200	105
40	11/18/50	5300	108
41	11/19/50	5400	110
42	11/20/50	5500	112
43	11/21/50	5600	115
44	11/22/50	5700	118
45	11/23/50	5800	120
46	11/24/50	5900	122
47	11/25/50	6000	125
48	11/26/50	6100	128
49	11/27/50	6200	130
50	11/28/50	6300	132
51	11/29/50	6400	135
52	11/30/50	6500	138
53	12/1/50	6600	140
54	12/2/50	6700	142
55	12/3/50	6800	145
56	12/4/50	6900	148
57	12/5/50	7000	150
58	12/6/50	7100	152
59	12/7/50	7200	155
60	12/8/50	7300	158
61	12/9/50	7400	160
62	12/10/50	7500	162
63	12/11/50	7600	165
64	12/12/50	7700	168
65	12/13/50	7800	170
66	12/14/50	7900	172
67	12/15/50	8000	175
68	12/16/50	8100	178
69	12/17/50	8200	180
70	12/18/50	8300	182
71	12/19/50	8400	185
72	12/20/50	8500	188
73	12/21/50	8600	190
74	12/22/50	8700	192
75	12/23/50	8800	195
76	12/24/50	8900	198
77	12/25/50	9000	200
78	12/26/50	9100	202
79	12/27/50	9200	205
80	12/28/50	9300	208
81	12/29/50	9400	210
82	12/30/50	9500	212
83	12/31/50	9600	215
84	1/1/51	9700	218
85	1/2/51	9800	220
86	1/3/51	9900	222
87	1/4/51	10000	225
88	1/5/51	10100	228
89	1/6/51	10200	230
90	1/7/51	10300	232
91	1/8/51	10400	235
92	1/9/51	10500	238
93	1/10/51	10600	240
94	1/11/51	10700	242
95	1/12/51	10800	245
96	1/13/51	10900	248
97	1/14/51	11000	250
98	1/15/51	11100	252
99	1/16/51	11200	255
100	1/17/51	11300	258
101	1/18/51	11400	260
102	1/19/51	11500	262
103	1/20/51	11600	265
104	1/21/51	11700	268
105	1/22/51	11800	270
106	1/23/51	11900	272
107	1/24/51	12000	275
108	1/25/51	12100	278
109	1/26/51	12200	280
110	1/27/51	12300	282
111	1/28/51	12400	285
112	1/29/51	12500	288
113	1/30/51	12600	290
114	1/31/51	12700	292
115	2/1/51	12800	295
116	2/2/51	12900	298
117	2/3/51	13000	300
118	2/4/51	13100	302
119	2/5/51	13200	305
120	2/6/51	13300	308
121	2/7/51	13400	310
122	2/8/51	13500	312
123	2/9/51	13600	315
124	2/10/51	13700	318
125	2/11/51	13800	320
126	2/12/51	13900	322
127	2/13/51	14000	325
128	2/14/51	14100	328
129	2/15/51	14200	330
130	2/16/51	14300	332
131	2/17/51	14400	335
132	2/18/51	14500	338
133	2/19/51	14600	340
134	2/20/51	14700	342
135	2/21/51	14800	345
136	2/22/51	14900	348
137	2/23/51	15000	350
138	2/24/51	15100	352
139	2/25/51	15200	355
140	2/26/51	15300	358
141	2/27/51	15400	360
142	2/28/51	15500	362
143	2/29/51	15600	365
144	2/30/51	15700	368
145	3/1/51	15800	370
146	3/2/51	15900	372
147	3/3/51	16000	375
148	3/4/51	16100	378
149	3/5/51	16200	380
150	3/6/51	16300	382
151	3/7/51	16400	385
152	3/8/51	16500	388
153	3/9/51	16600	390
154	3/10/51	16700	392
155	3/11/51	16800	395
156	3/12/51	16900	398
157	3/13/51	17000	400
158	3/14/51	17100	402
159	3/15/51	17200	405
160	3/16/51	17300	408
161	3/17/51	17400	410
162	3/18/51	17500	412
163	3/19/51	17600	415
164	3/20/51	17700	418
165	3/21/51	17800	420
166	3/22/51	17900	422
167	3/23/51	18000	425
168	3/24/51	18100	428
169	3/25/51	18200	430
170	3/26/51	18300	432
171	3/27/51	18400	435
172	3/28/51	18500	438
173	3/29/51	18600	440
174	3/30/51	18700	442
175	3/31/51	18800	445
176	4/1/51	18900	448
177	4/2/51	19000	450
178	4/3/51	19100	452
179	4/4/51	19200	455
180	4/5/51	19300	458
181	4/6/51	19400	460
182	4/7/51	19500	462
183	4/8/51	19600	465
184	4/9/51	19700	468
185	4/10/51	19800	470
186	4/11/51	19900	472
187	4/12/51	20000	475
188	4/13/51	20100	478
189	4/14/51	20200	480
190	4/15/51	20300	482
191	4/16/51	20400	485
192	4/17/51	20500	488
193	4/18/51	20600	490
194	4/19/51	20700	492
195	4/20/51	20800	495
196	4/21/51	20900	498
197	4/22/51	21000	500
198	4/23/51	21100	502
199	4/24/51	21200	505
200	4/25/51	21300	508
201	4/26/51	21400	510
202	4/27/51	21500	512
203	4/28/51	21600	515
204	4/29/51	21700	518
205	4/30/51	21800	520
206	5/1/51	21900	522
207	5/2/51	22000	525
208	5/3/51	22100	528
209	5/4/51	22200	530
210	5/5/51	22300	532
211	5/6/51	22400	535
212	5/7/51	22500	538
213	5/8/51	22600	540
214	5/9/51	22700	542
215	5/10/51	22800	545
216	5/11/51	22900	548
217	5/12/51	23000	550
218	5/13/51	23100	552
219	5/14/51	23200	555
220	5/15/51	23300	558
221	5/16/51	23400	560
222	5/17/51	23500	562
223	5/18/51	23600	565
224	5/19/51	23700	568
225	5/20/51	23800	570
226	5/21/51	23900	572
227	5/22/51	24000	575
228	5/23/51	24100	578
229	5/24/51	24200	580
230	5/25/51	24300	582
231	5/26/51	24400	585
232	5/27/51	24500	588
233	5/28/51	24600	590
234	5/29/51	24700	592
235	5/30/51	24800	595
236	5/31/51	24900	598
237	6/1/51	25000	600
238	6/2/51	25100	602
239	6/3/51	25200	605
240	6/4/51	25300	608
241	6/5/51	25400	610
242	6/6/51	25500	612
243	6/7/51	25600	615
244	6/8/51	25700	618
245	6/9/51	25800	620
246	6/10/51	25900	622
247	6/11/51	26000	625
248	6/12/51	26100	628
249	6/13/51	26200	630
250	6/14/51	26300	632
251	6/15/51	26400	635
252	6/16/51	26500	638
253	6/17/51	26600	640
254	6/18/51	26700	642
255	6/19/51	26800	645
256	6/20/51	26900	648
257	6/21/51	27000	650
258	6/22/51	27100	652
259	6/23/51	27200	655
260	6/24/51	27300	658
261	6/25/51	27400	660
262	6/26/51	27500	662
263	6/27/51	27600	665
264	6/28/51	27700	668
265	6/29/51	27800	670
266	6/30/51	27900	672
267	7/1/51	28000	675
268	7/2/51	28100	678
269	7/3/51	28200	680
270	7/4/51	28300	682
271	7/5/51	28400	685
272	7/6/51	28500	688
273	7/7/51	28600	690
274	7/8/51	28700	692
275	7/9/51	28800	695
276	7/10/51	28900	698
277	7/11/51	29000	700
278	7/12/51	29100	702
279	7/13/51	29200	705
280	7/14/51	29300	708
281	7/15/51	29400	710
282	7/16/51	29500	712
283	7/17/51	29600	715
284	7/18/51	29	





TABLE I 12 YEAR DEMOGRAPHIC GAP - GRENADA

<u>Year</u>	<u>Births per 1000 Population</u>	<u>Deaths per 1000 Population</u>	<u>Demographic Gap per 1000 Population</u>
1956	51.8	13.3	38.5
1957	46.6	10.1	35.5
1958	44.6	10.7	33.9
1959	45.3	10.0	35.3
1960	45.3	11.6	33.9
1961	41.00	11.35	29.65
1962	37.72	9.27	28.45
1963	37.35	8.97	28.38
1964	36.18	8.62	27.56
1965	31.07	8.60	22.47
1966	28.87	8.72	20.15
1967	27.97	7.81	20.16

Source: Dept. of Statistics, St. George's, Grenada, 1967.



TABLE II GRENADA IMPORT AND EXPORT FIGURES 1951-1966  
(IN MILLIONS \$W.I.)

Year	Imports			Exports
	Total	Food	Food as % of Total	
1951	7.90	2.60	32.9	6.65
1952	8.02	2.88	35.9	6.92
1953	7.09	2.98	42.0	8.48
1954	8.11	3.20	39.5	8.75
1955	10.33	3.71	35.91	4.84
1956*	12.55	4.33	34.50	4.57
1957	10.33	3.38	32.72	8.21
1958	11.19	3.83	34.2	7.48
1959	12.51	4.11	32.9	7.00
1960	14.83	5.03	33.9	5.77
1961	16.08	4.87	30.3	5.92
1962	15.32	4.96	32.37	7.78
1963	15.02	5.41	36.00	6.92
1964	17.64	5.64	32.00	10.68
1965	19.08	5.91	31.0	9.53
1966	21.72	6.70**	32.8	n.a.

\* Year following damage done by Hurricane Janet.

\*\* Estimate

Source: Annual Overseas Trade Report 1963, Government Printing Office, St. George's, 1966, p. 3.

: Documents of the Dept. of Statistics, St. George's, 1967.





TABLE III IMPORT TARIFFS ON FOODSTUFFS

Rate of Duty (In \$W.I.)		
	Preferential (U.K. and Commonwealth)	General
I. Fresh Vegetables		
Irish Potatoes	50¢ per 100 lbs.	\$1.00 per 100 lbs.
Beans, peas, lentils	24¢ per 100 lbs.	36¢ per 100 lbs.
Garlic	24¢ per 100 lbs.	48¢ per 100 lbs.
Onions	50¢ per 100 lbs.	\$1.00 per 100 lbs.
II. Processed Goods		
Canned goods	\$1.00 per 100 lbs.	\$1.50 per 100 lbs.
Soups, juices, etc.	10% of value	15% of value
Vegetables preserved and prepared in airtight containers, 10% - 15% of value.		
All frozen goods, all fresh fruit and vegetables not listed are exempt from import tax.		















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